

CERCLIS# TXD/980750624

**SITE ASSESSMENT REPORT
FOR
Emchem Corporation Site
Houston, Harris County, Texas**

February 28, 1993

Prepared for:

**J. Chris Petersen
Deputy Project Officer
Emergency Response Branch
EPA - REGION 6**

Contract Number: 68-WO-0037



ecology and environment, inc.

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Cerclis# TXD 980750624

DATE: February 28, 1993

TO: Warren Zehner, OSC
EPA Region 6, Emergency Response Branch

THRU: J. Chris Petersen, DPO
EPA Region 6, Emergency Response Branch

THRU: Chris Quina, TATL
Region 6, Technical Assistance Team

FROM: Megan Fedders
Region 6, Technical Assistance Team

SUBJ: Site Assessment Report: Emchem Corporation Site
Pearland, Brazoria County, Texas
TDD# T06-9210-079
PAN# ETX0139SAA

I. INTRODUCTION

In October, 1992 the Region 6 Technical Assistance Team (TAT) was tasked by the Emergency Response Branch (ERB) of the United States Environmental Protection Agency (EPA) to conduct a site assessment at the Emchem Corporation Site, Pearland, Brazoria County, Texas. Specifically, the TAT was tasked to: (1) coordinate with Texas Water Commission (TWC) representatives regarding site access and background information; (2) conduct windshield survey of site to develop sampling plan; (3) develop and execute sampling plan to determine if imminent and substantial endangerment to health or the environment is present on site; and (4) brief OSC on results of (2) and (3). Site visits were made on November 6, 1992 and January 12 and February 9, 1993. TAT members assisting in the site assessment were Jenniffer Shields, David Beeson, Roberta Haglund, Satish Reddy, and Megan Fedders.

II. BACKGROUND

Emchem Corporation is located in a light industrial area at 4308

Rice Dryer Road in Pearland, Brazoria County, Texas. The facility, owned and operated by Dr. Emery Miller, is unfenced and usually unattended. The production of specialty chemicals from tri- and tetraethylene glycol and the distillation of naphtha still bottoms were the main chemical processes performed at the facility.

According to Mr. Steve Hamm of TWC, the Emchem facility had been inactive for at least two years when he visited the site in July 1992. This visit was prompted by a release of triethylene glycol which occurred when a child opened a valve on a tanker trailer located on the northern edge of the property, bordering Rice Dryer Road. In addition to this incident, several complaints regarding the site are received by TWC every month. Two soil samples taken on July 15, 1993 by Hamm indicated high levels of naphthalene and related compounds as well as some volatile organics (Attachment L). As of October 1992, the TWC had no cleanup plans, but the site has been referred to their enforcement branch on a total of three occasions.

III. ACTIONS TAKEN

In early November, TAT conferred with Hamm and obtained background information as well as directions to the site. Hamm indicated that site access would not be a problem with Miller. On November 6, 1992 TAT members Shields and Fedders conducted a windshield survey of the site to assess present conditions and develop a sampling strategy. On November 12, 1992 TAT sent a letter requesting site access (Attachment M) to Miller which he received by registered mail on November 21, 1992. TAT had not received the signed access agreement by December 17, 1992 and contacted Miller, who stated that a death in his immediate family had prevented him from responding. Miller agreed to let TAT conduct a site assessment in his presence, but refused to sign the standard EPA access agreement. Miller agreed to meet TAT at Emchem at 1000 hours on January 12, 1993. A letter was sent to Miller on January 5, 1993 confirming the oral consent to the investigation (Attachment M).

Before commencing site work, TAT prepared a Quality Assurance Sampling Plan (QASP) in accordance with the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (Attachment F). An array of six soil samples, including one background sample, was designed to identify on-site contamination and to determine possible off-site migration of contaminants. The sampling plan also included collection and analysis of four liquid waste samples to characterize on-site containerized waste. Under TDD# T06-9301-008, laboratory analysis by NDRC Laboratories, Houston, TX was arranged. Analyses for all samples included Volatile Organic Compounds, Semi-volatile Organic Compounds, Pesticides, Polychlorinated Biphenyls (PCBs), and Priority Pollutant Metals. In addition, Corrosivity (pH) and Flashpoint were to be determined for the liquid waste samples.

TAT members Beeson, Haglund, Reddy and Fedders met Miller on site at 0935 hours on January 12, 1993. At this time, Miller informed TAT that he had an appointment at 1330 hours and that they would have to depart the site by 1300 hours. Accompanied by Miller, TAT members Fedders and Reddy performed initial air monitoring throughout the entire site with the HNU PI 101 photoionizer (10.2 eV probe) and the Gastech GX-86 Four Gas Monitor. Background readings were zero parts per million (ppm) on the HNU and 20.9 percent oxygen, zero percent lower explosive limit, zero ppm hydrogen sulfide, and zero ppm carbon monoxide on the GX-86. No readings above background were observed with either instrument anywhere on site. TAT members Reddy and Haglund then photodocumented the entire site while Beeson and Fedders obtained site information from Miller.

Miller stated that the patch of black, asphalt-like material to the southwest of the warehouse is a furan-resin poured to fill a low area. Residuals of this material can be found in tank N3 (Attachment B). He also said that the "landfarm" area in the southeast corner of the site contains very dark brown and orange solid materials enclosed by a berm. According to Miller, the landfarm contains inert by-products of various chemical processes. Miller attributed the stained soil visible in several locations to the polyethylene glycol materials.

According to Miller, the drums stored outside contain unwanted by-products and waste materials from chemical reactions. All of the 150-200 drums were rusted and completely exposed to outside conditions. TAT observed extensively stained soil in the drum area and a sheen on nearby standing water (Attachment B). Ten of the facility's tanks, which appeared to be in good condition, contain a mixture of tri- and tetraethylene glycol. According to Miller, samples taken from tanks T18 and EBT would be fairly representative of the mixtures in the majority of the tanks. Tank contents and approximate volumes are detailed in Attachment G.

At 1050 hours TAT members Beeson and Reddy began tank and drum sampling. Samples were collected from the two most easily accessible tanks, EBT and T18. Starting at 1150 hours, two drum samples, D1 and D2, were collected from the outside drum area. TAT members Haglund and Fedders collected the soil samples between 1215 and 1255 hours. As per Miller's request, a split of every sample collected was provided to him. In addition, one soil sample was collected in triple volume for duplicate and matrix spike analyses. All sample paperwork was completed and the samples sealed and placed on ice. TAT departed the site at 1320 hours. The samples were locked in a sealed cooler in the TAT warehouse overnight and delivered to the laboratory at 0852 hours on January 13, 1993.

On February 8, 1993 TAT arranged with Miller to meet him on site to briefly inventory the warehouse. TAT members Fedders and Beeson

arrived on site at 1540 hours on February 9, 1993. In the warehouse, TAT observed approximately forty 55-gallon drums and approximately fifty 5-gallon buckets. According to Miller, approximately half of the drums and the fifty 5-gallon buckets contain polyethylene glycol material similar to those in the tanks sampled. The remainder of the drums are empty or contain sand. After photodocumenting the warehouse contents, TAT departed the site at 1600 hours.

The analytical data package (Attachment K) was received and validated by site QC Coordinator Megan Fedders according to guidelines outlined in OSWER 9360.4-01 (Attachment J). Detection limits for the volatile and semi-volatile organics analyses exceeded the method quantitation limits for several samples. These result from dilutions made due to extremely high concentrations of a few compounds. Analyses attempted at smaller dilutions in these cases were unsuccessful. Sample results subject to elevated detection limits are indicated in the Data Summary (Attachment I) and in the Data Validation Report (Attachment J).

The semi-volatile analysis of the liquid waste samples revealed high levels of Tentatively Identified Compounds, including percent levels of triethylene glycol in three of the samples. Low levels of a few volatile compounds (less than 14 ppm) were detected in sample D1. In addition, sample D2 contained 186 milligrams per kilogram of the PCB mixture Arochlor-1242. No sample had a flashpoint below 200 degrees Fahrenheit, and the pH values ranged from 9.0 to 12.6. Several metals were detected in low quantities.

Low (parts per million) levels of volatile organics were found in sample S3 from the drum area. No volatiles were detected in any other soil sample. Levels of semi-volatiles were also in the parts per million range in samples B1 and S1-S4. Sample S5 from the "landfarm" had a naphthalene concentration of 141,000 mg/Kg (14.1% by weight) in addition to parts per thousand levels of other polynuclear aromatic hydrocarbons. PCBs were detected at levels of 25.0 mg/Kg and below in all soil samples except S5. Analytical data indicates the presence of several heavy metals in the soil, including lead, chromium, and cadmium.

The analytical results have been reported to the OSC, and no further investigation is anticipated at this time. The TWC has also been notified of investigation results as per OSC request.

ATTACHMENTS:

- A. Site Location Map
- B. Site Sketch
- C. Photographs (8 pages)
- D. Unused Photographs
- E. Negatives (Included in the TAT File Copy of Report)

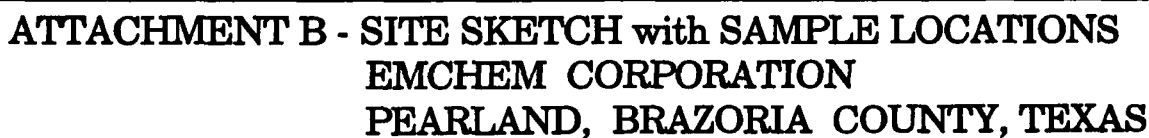
- F. Quality Assurance Sampling Plan
- G. Tank Inventory
- H. Copy of Sample Chain of Custody Form
- I. Data Summary
- J. Data Validation Report
- K. Analytical Data Package (under separate cover)
- L. Copy of Texas Water Commission Sample Results
- M. Copy of Letters Requesting and Confirming Site Access
- N. Records of Communication (5 pages)
- O. Copy of Logbook (pages 1-10, 33-4, 44-8)
- P. Copy of TDD# T06-9210-079 and Amendment A

ATTACHMENT A

Site Location Map

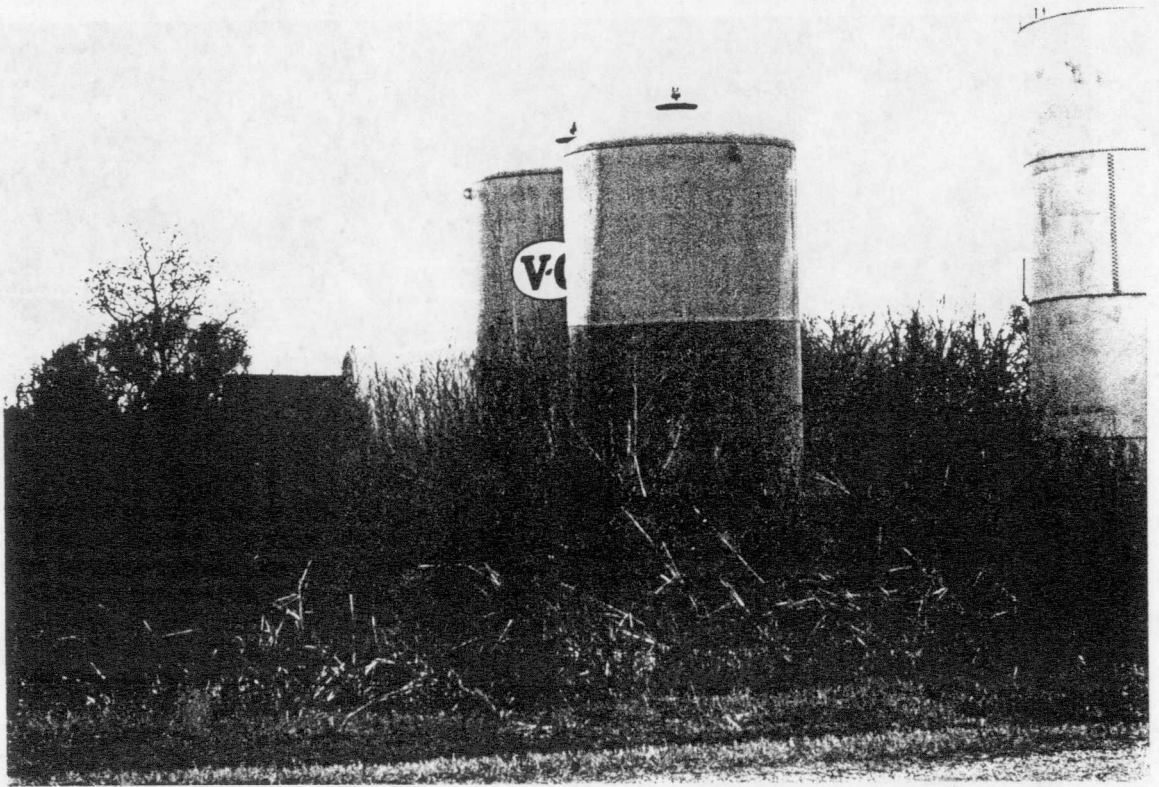
ATTACHMENT B

Site Sketch



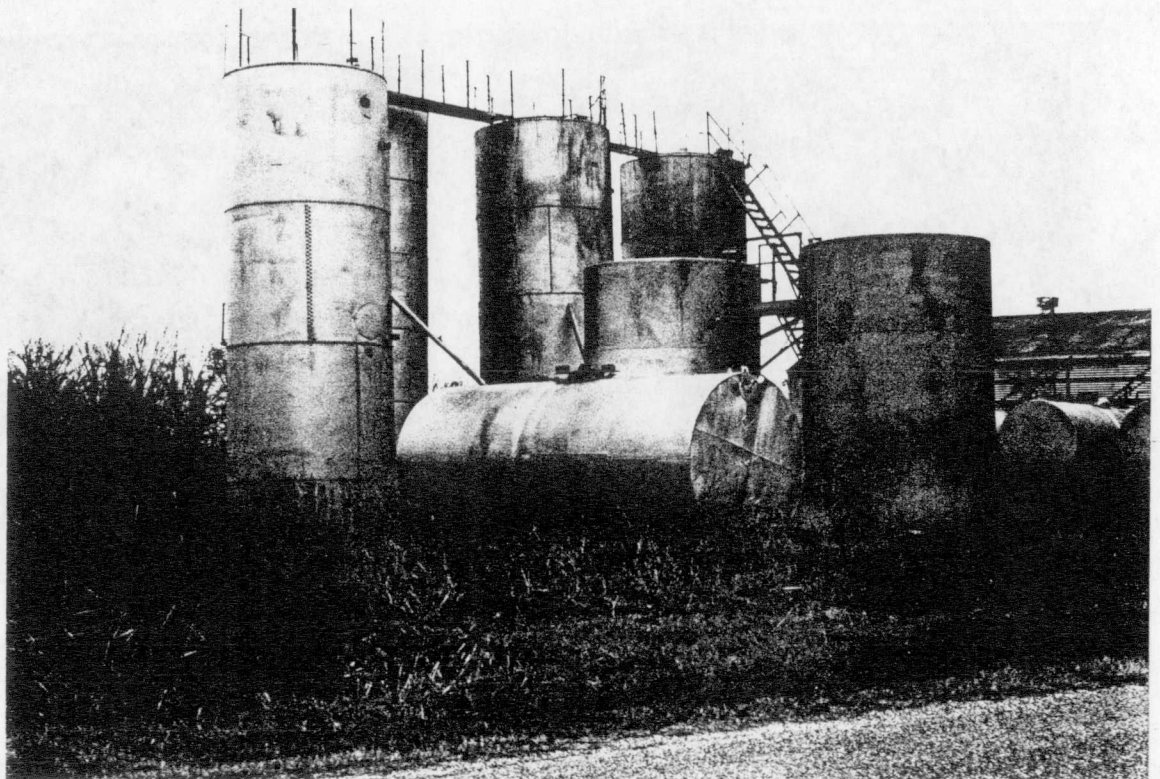
ATTACHMENT C

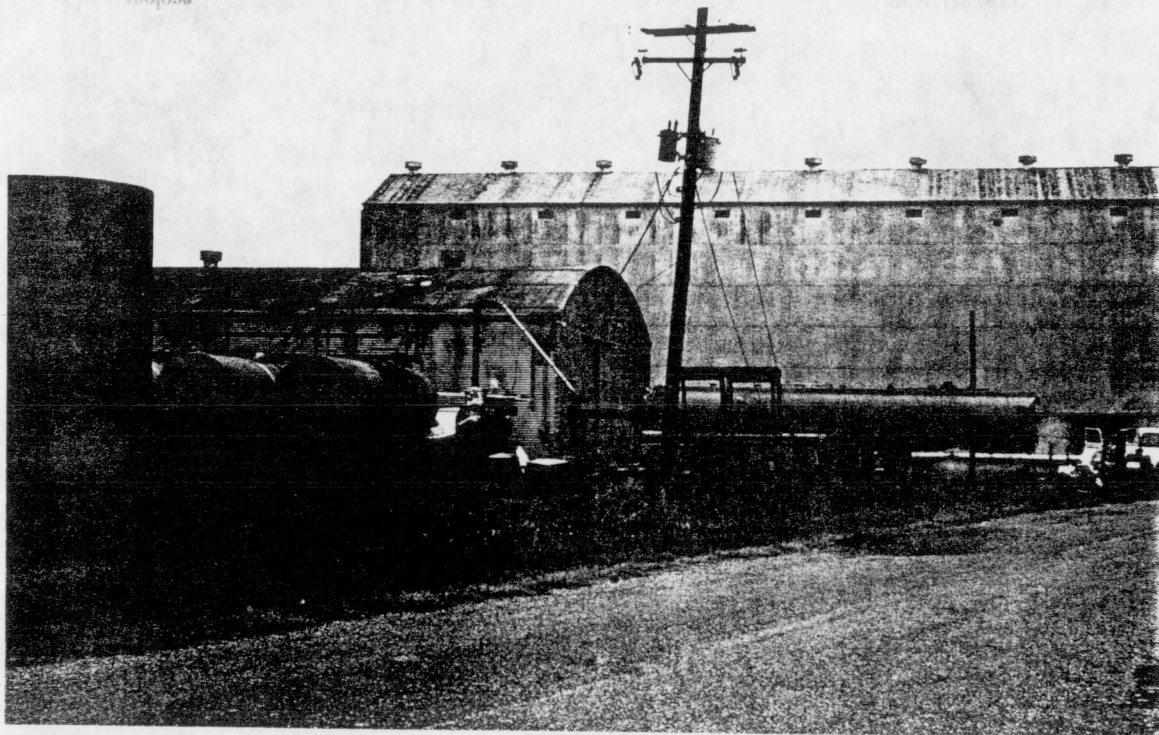
Photographs (8 pages)



SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 201 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1012 DIRECTION: SW
 NORTHERN EDGE OF EMCHEM CORPORATION WITH TANKS.

SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 202 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1012 DIRECTION: SW
 NORTHERN EDGE OF EMCHEM CORPORATION WITH TANKS.

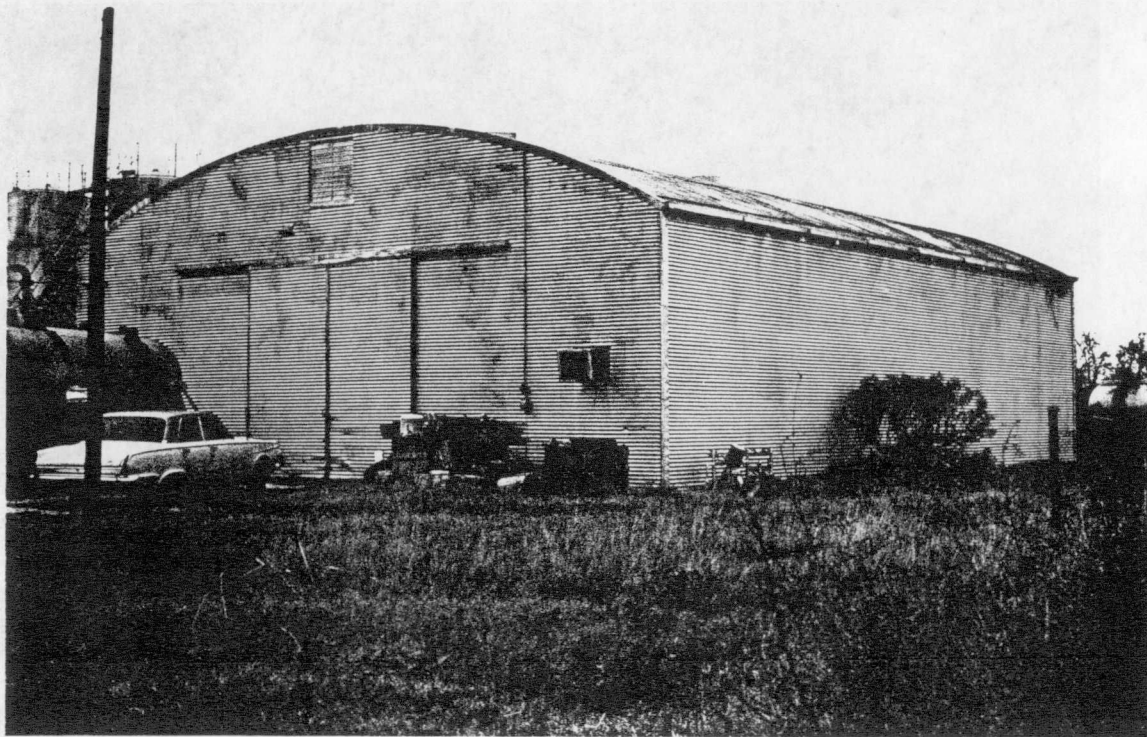




SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 203 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1012 DIRECTION: W
 NORTHERN EDGE OF EMCHEM CORPORATION WITH TANKS.

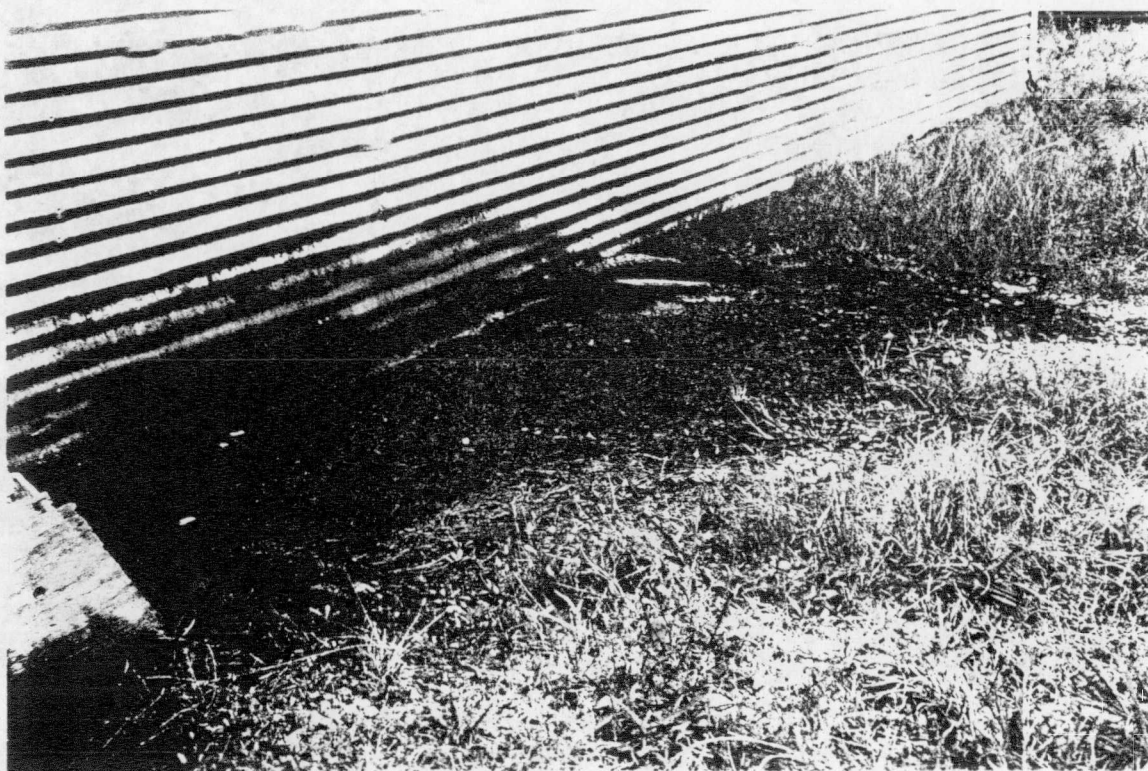
SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 204 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1013 DIRECTION: S
 DRUMS NEAR WAREHOUSE ON EMCHEM SITE.

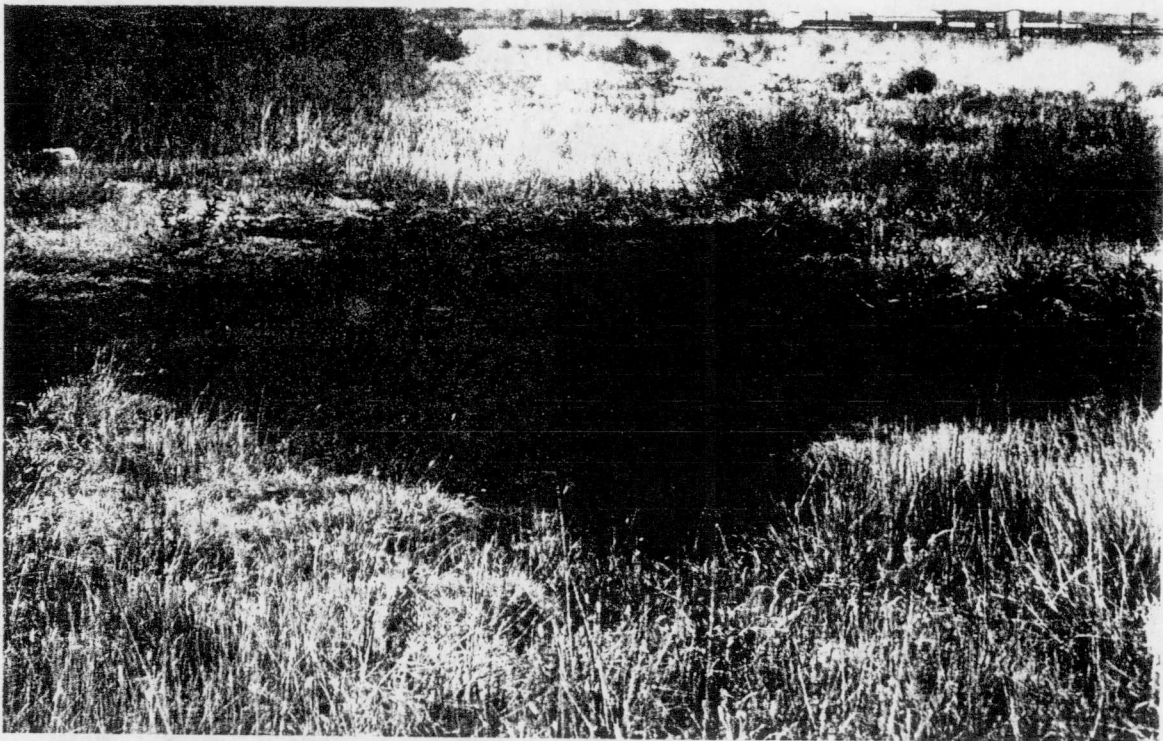




SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 206 PHOTOGRAPHER/WITNESS: REDDY HAGLUND
 DATE: 01/12/93 TIME: 1015 DIRECTION: SE
 WAREHOUSE FROM NW CORNER OF PROPERTY.

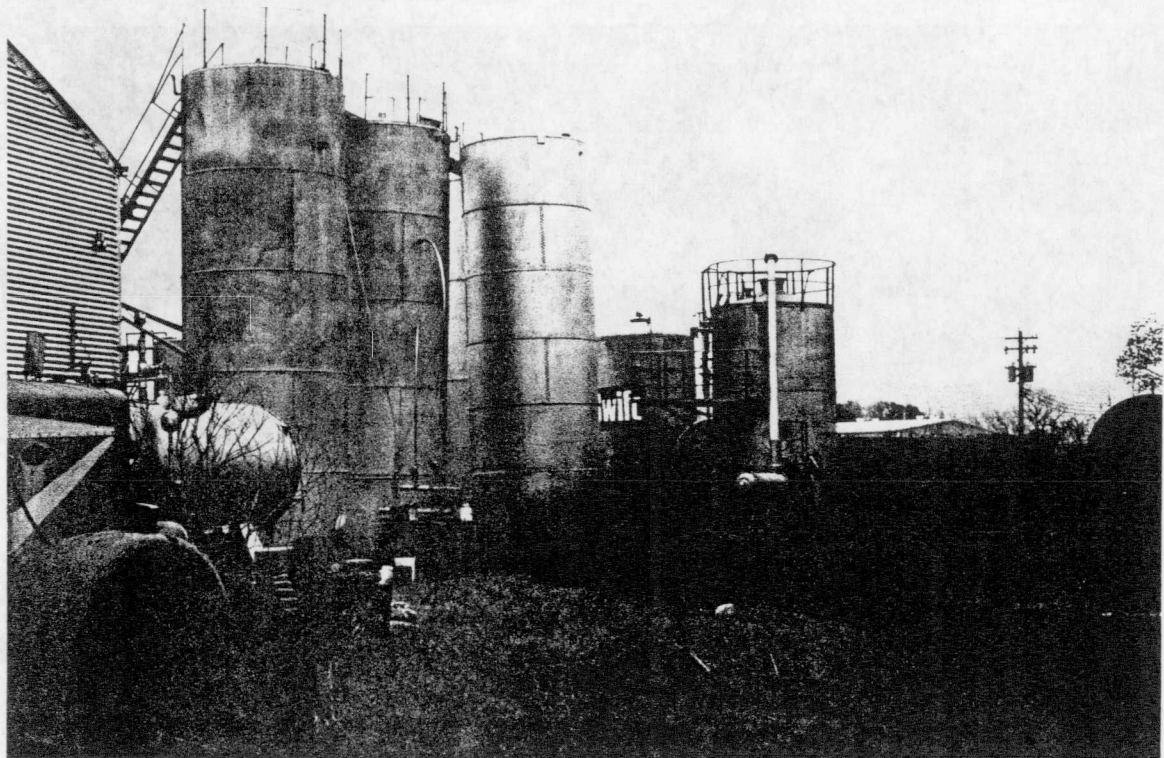
SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 207 PHOTOGRAPHER/WITNESS: REDDY HAGLUND
 DATE: 01/12/93 TIME: 1016 DIRECTION: SE
 STAINED SOIL ON WEST SIDE OF WAREHOUSE.

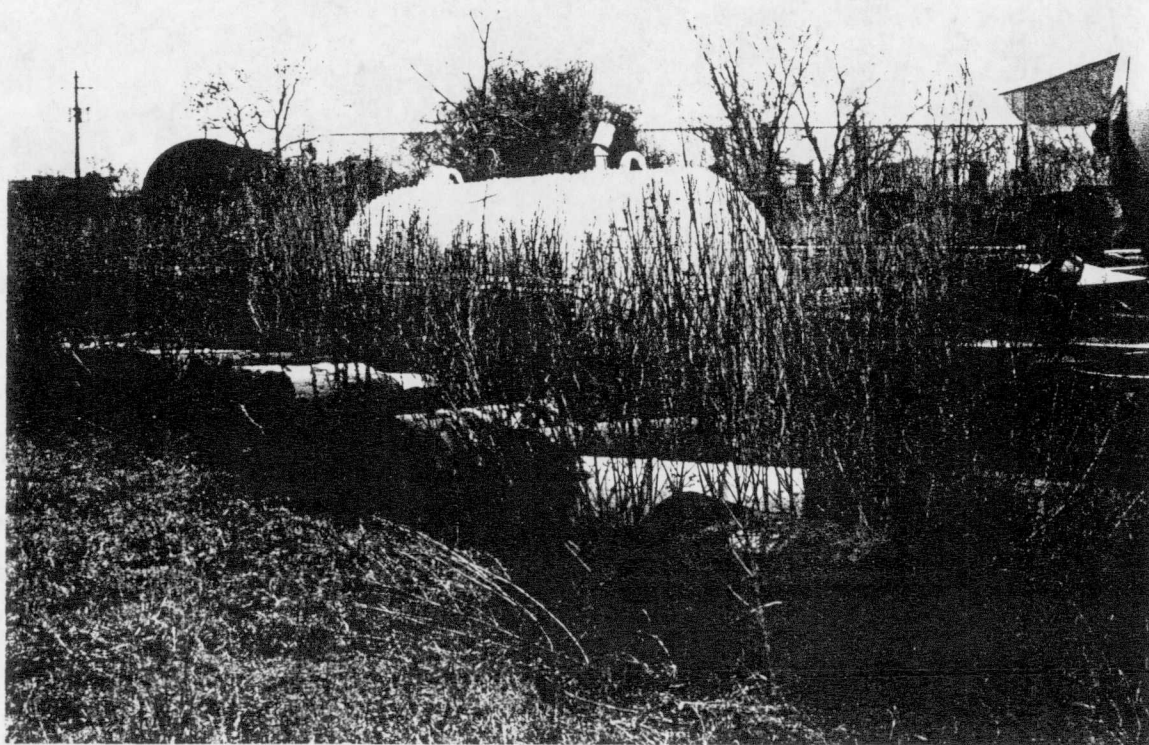




SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 208 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1016 DIRECTION: S
 FURAN RESIN USED AS FILL MATERIAL SW OF WAREHOUSE.

SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 210 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1018 DIRECTION: NE
 DRUMS AND ABOVE GROUND TANKS.





SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 211 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1019 DIRECTION: E
 DRUMS AND SMALL TANK SOUTH OF WAREHOUSE.

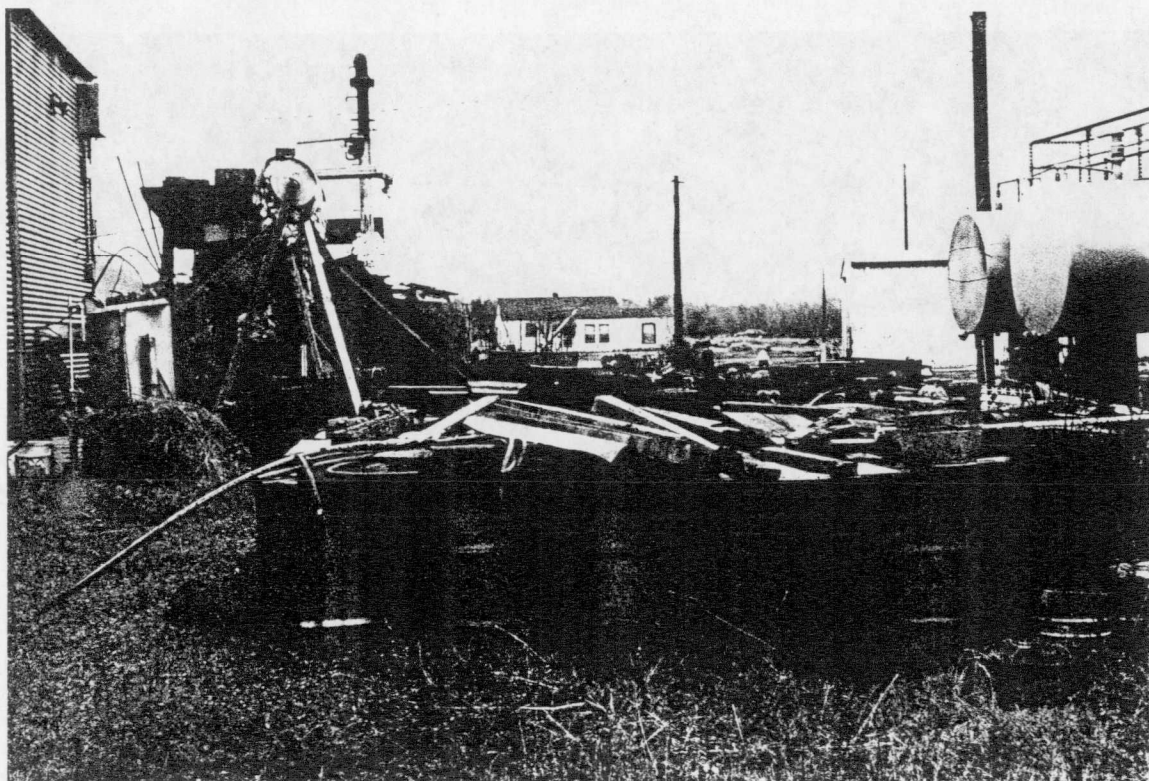
SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 213 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1021 DIRECTION: S
 DRUMS SE OF WAREHOUSE.

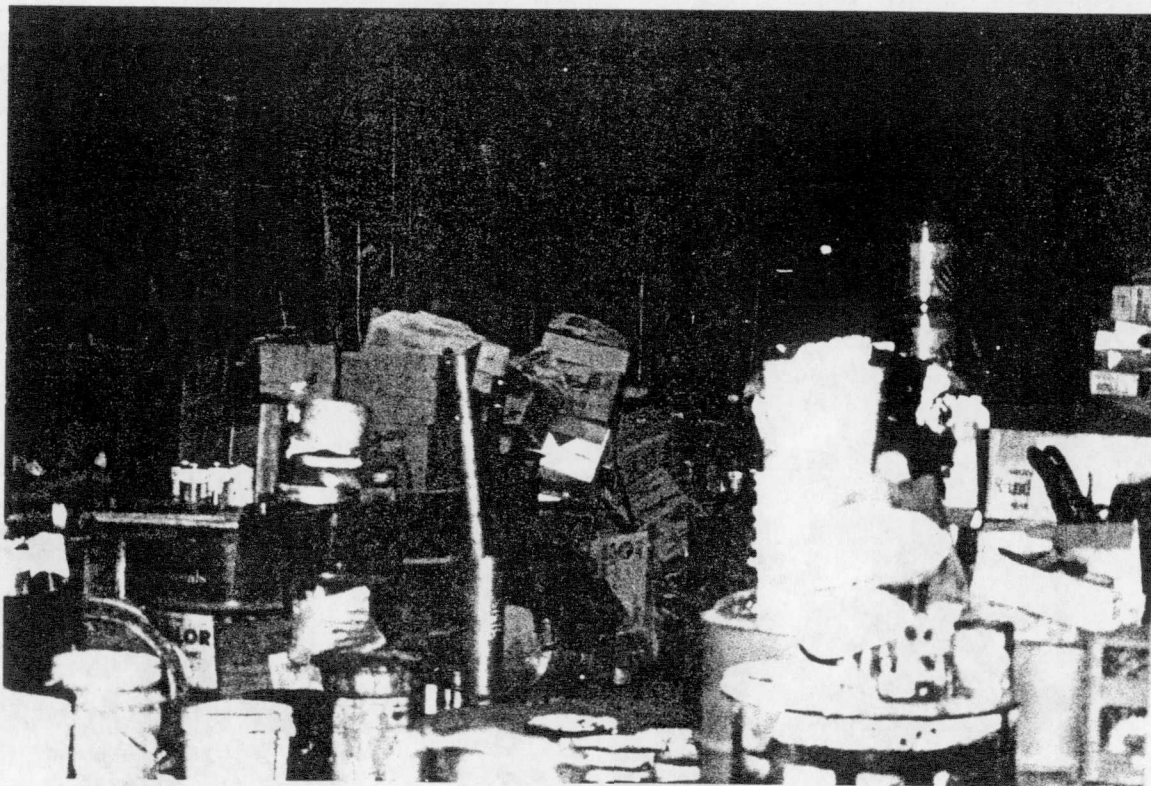




SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 214 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1021 DIRECTION: SE
 DRUMS SE OF WAREHOUSE.

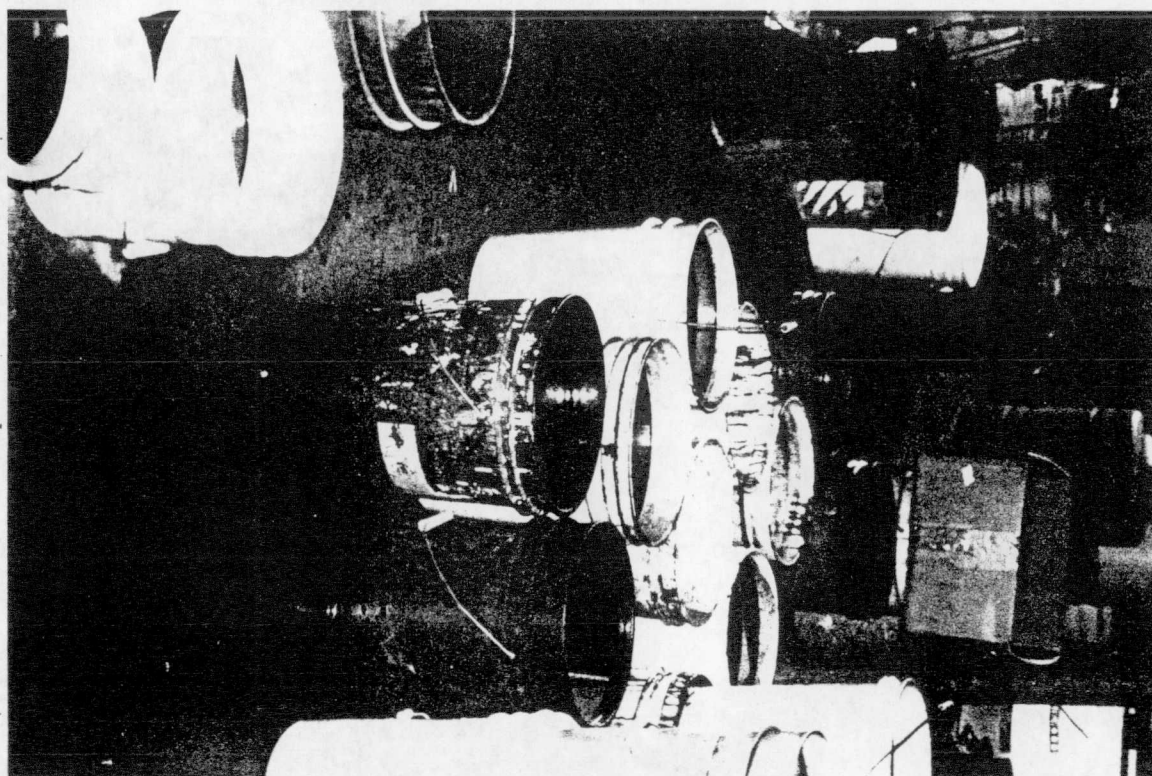
SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 215 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1021 DIRECTION: N
 DRUMS AND DEBRIS EAST OF WAREHOUSE.

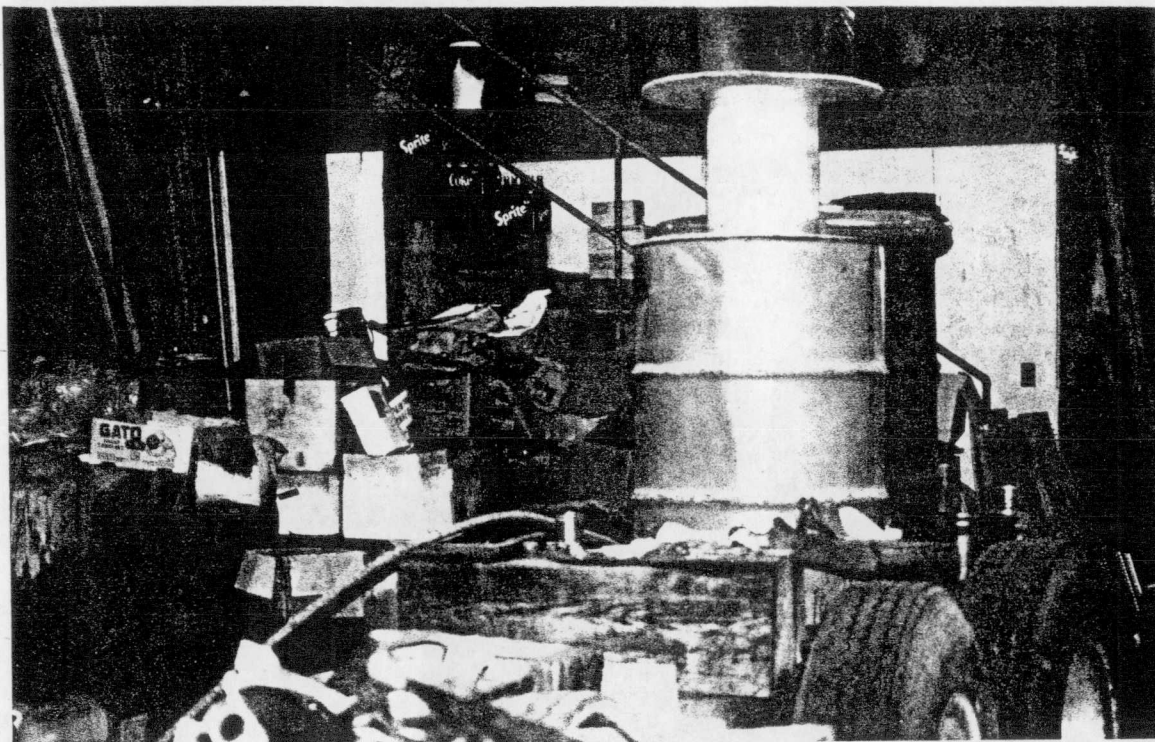




SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 401 PHOTOGRAPHER\WITNESS: BEESON\FEDDERS
 DATE: 02/09/93 TIME: 1550 DIRECTION: S
 VIEW OF WAREHOUSE FROM NORTH DOOR.

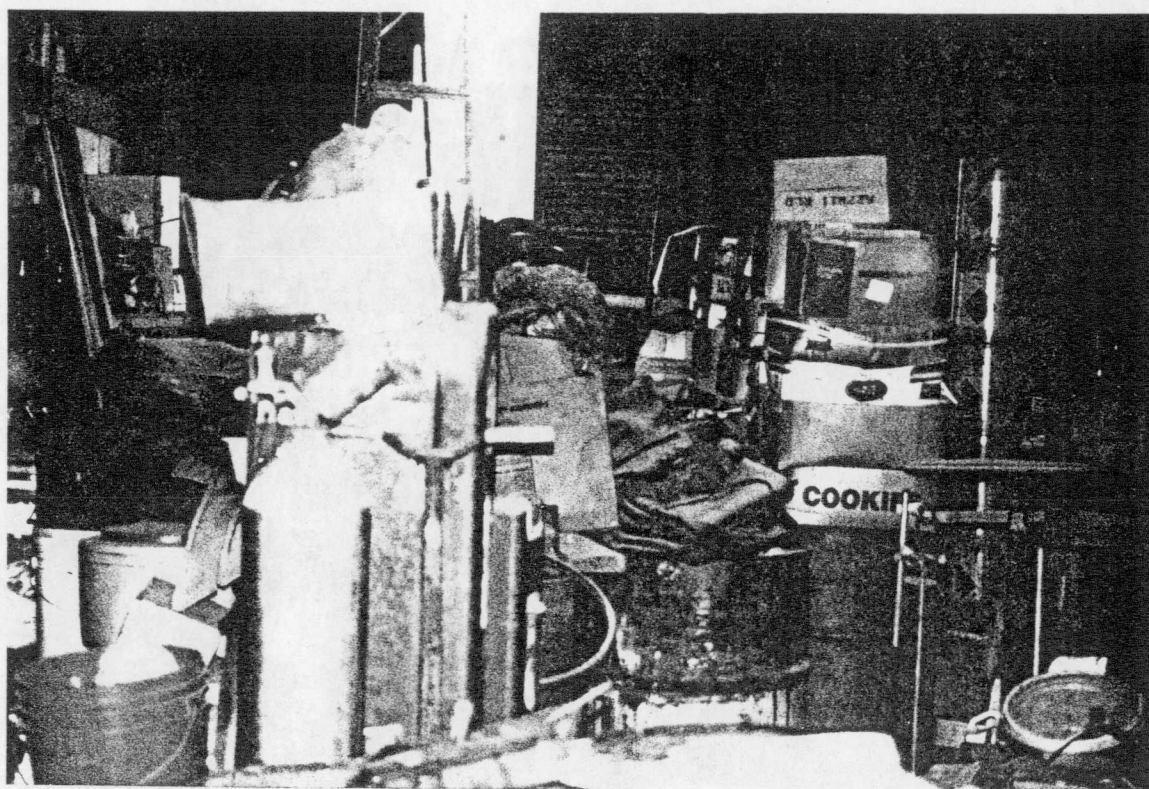
SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 404 PHOTOGRAPHER\WITNESS: BEESON\FEDDERS
 DATE: 02/09/93 TIME: 1552 DIRECTION: N
 VIEW OF FIVE-GALLON BUCKETS FILLED WITH GLYCOL MATERIAL





SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 405 PHOTOGRAPHER/WITNESS: BEESON/FEDDERS
 DATE: 02/09/93 TIME: 1553 DIRECTION: NW-NE
 PAN OF WAREHOUSE FROM SOUTH END.

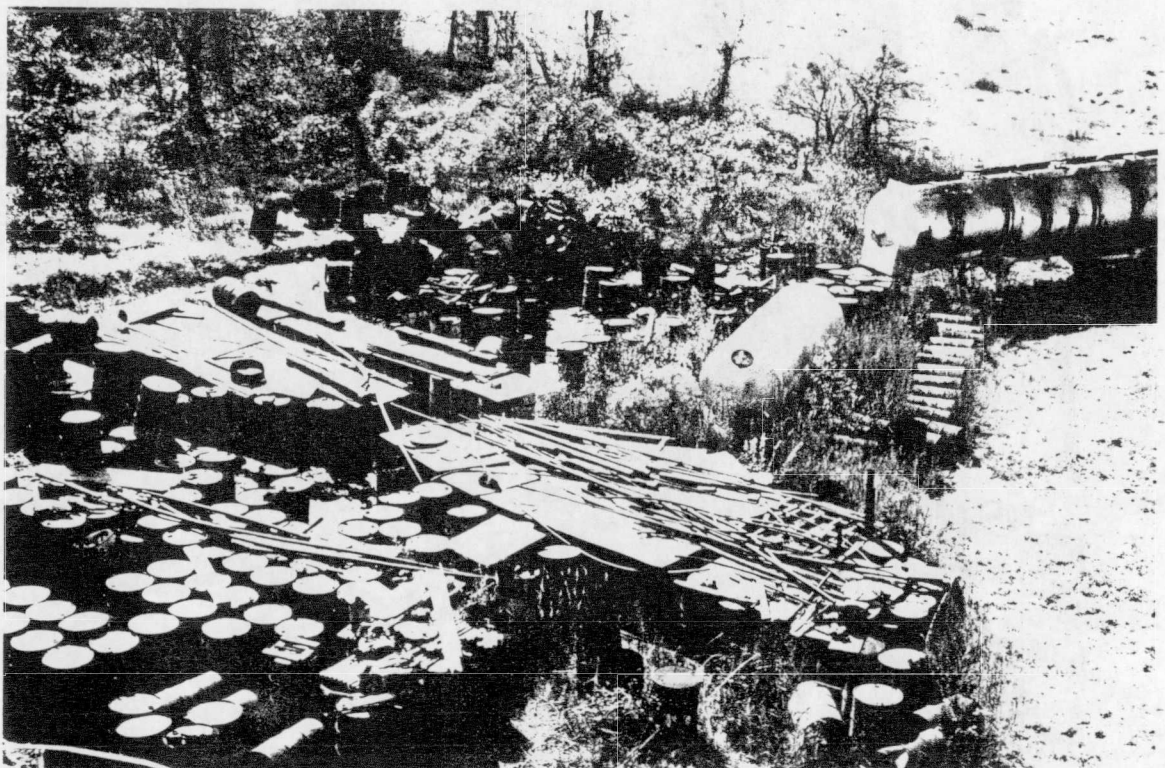
SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 406 PHOTOGRAPHER/WITNESS: BEESON/FEDDERS
 DATE: 02/09/93 TIME: 1553 DIRECTION: N
 PAN OF WAREHOUSE FROM SOUTH END.

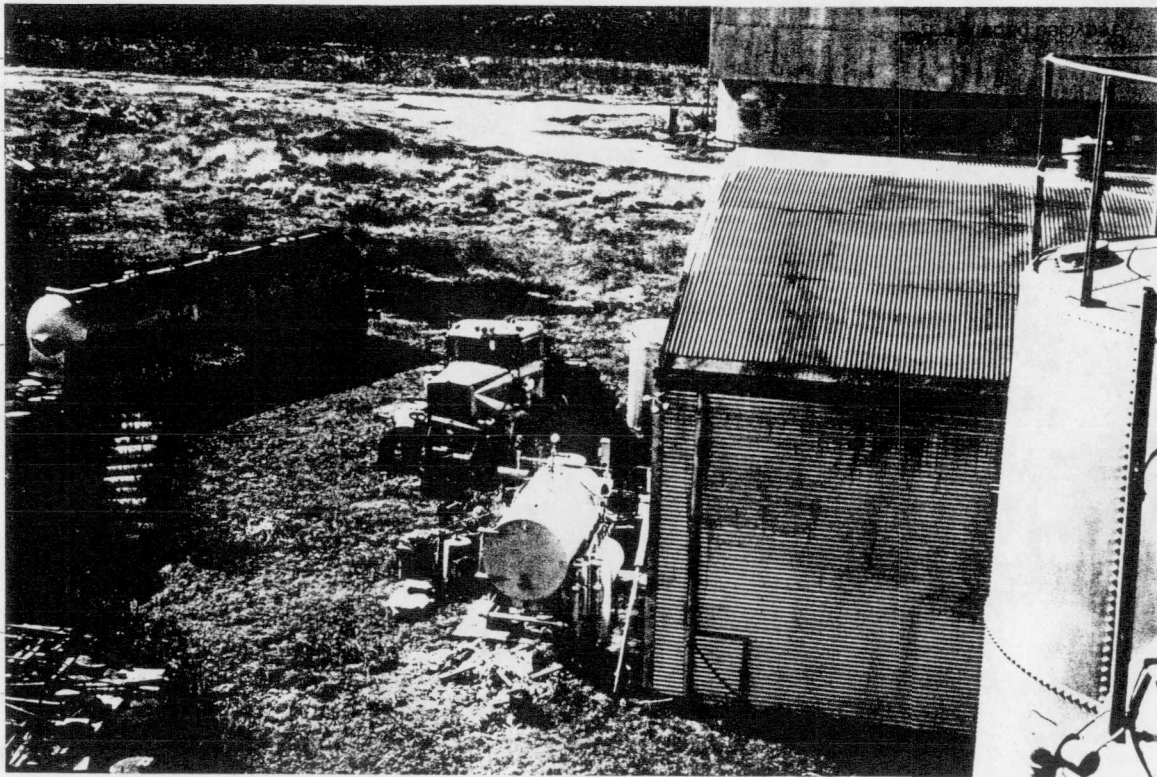




SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 315 PHOTOGRAPHER\WITNESS: BEESON
 DATE: 01/12/93 TIME: 1302 DIRECTION: SE-SW
 PAN OF SOUTH SIDE OF SITE.

SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 316 PHOTOGRAPHER\WITNESS: BEESON
 DATE: 01/12/93 TIME: 1302 DIRECTION: SE-SW
 PAN OF SOUTH SIDE OF SITE.





SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
PHOTO#: 317 PHOTOGRAPHER/WITNESS: BEESON
DATE: 01/12/93 TIME: 1302 DIRECTION: SE-SW
PAN OF SOUTH SIDE OF SITE.

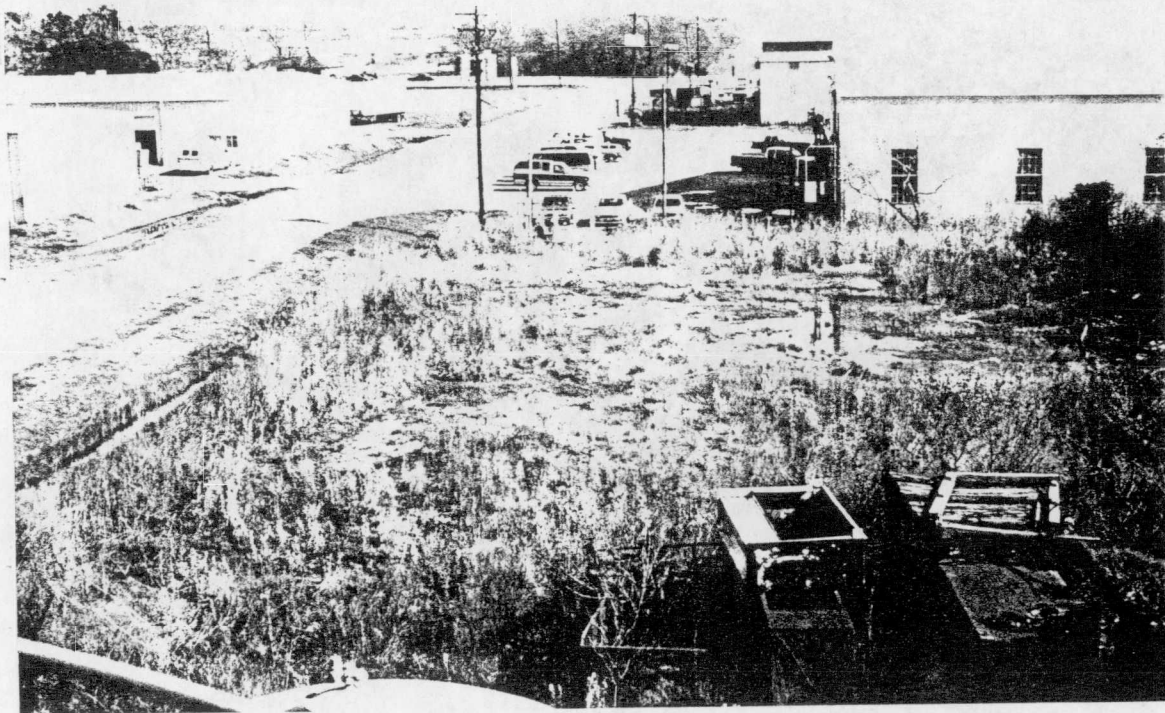
SITE NAME: EMCHEM CORPORATION
TDD#: T06-9210-079
PHOTO#: 315 PHOTOGRAPHER/WITNESS: BEESON
DATE: 01/12/93 TIME: 1302 DIRECTION: SE-SW
PAN OF SOUTH SIDE OF SITE.



SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 308 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1242 DIRECTION: NE
 VIEW OF TAT TAKING SOIL SAMPLE S2.

SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 309 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1245 DIRECTION: S
 VIEW OF TAT TAKING SOIL SAMPLE S3.

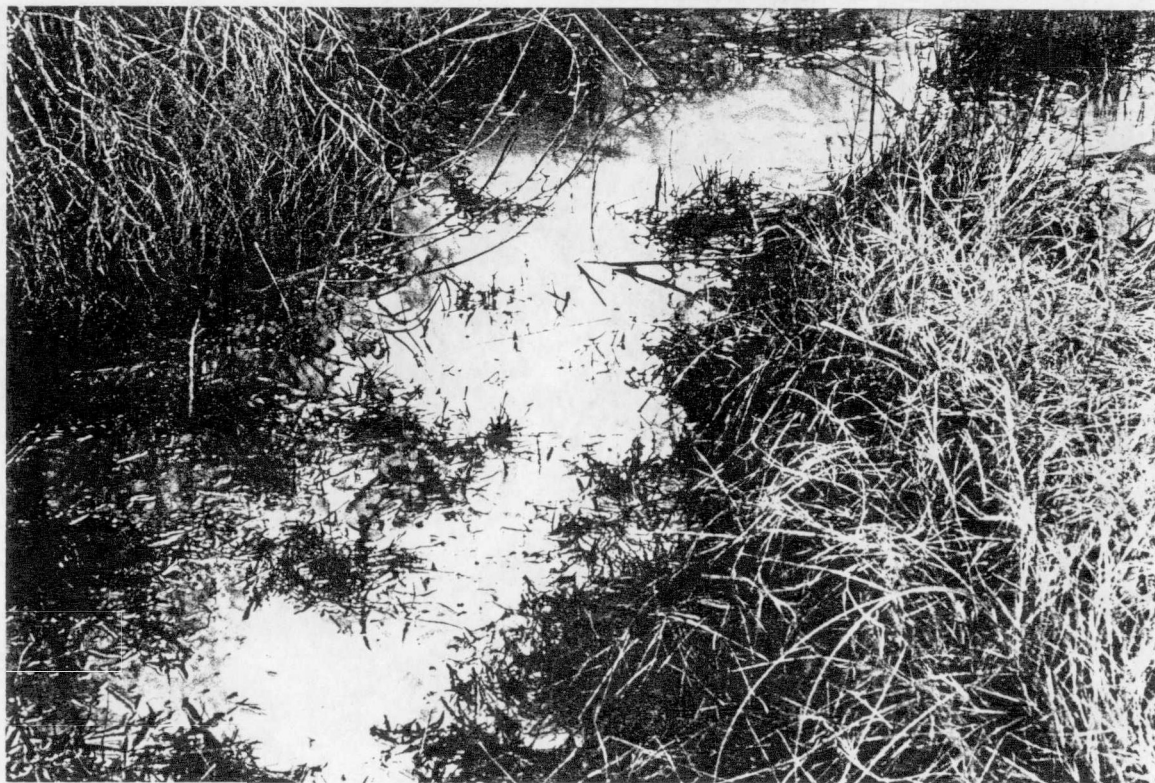




SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 313 PHOTOGRAPHER/WITNESS: BEESON
 DATE: 01/12/93 TIME: 1301 DIRECTION: E
 VIEW OF DRAINAGE OFF-SITE.

SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 314 PHOTOGRAPHER/WITNESS: BEESON
 DATE: 01/12/93 TIME: 1302 DIRECTION: SE-SW
 PAN OF SOUTH SIDE OF SITE.

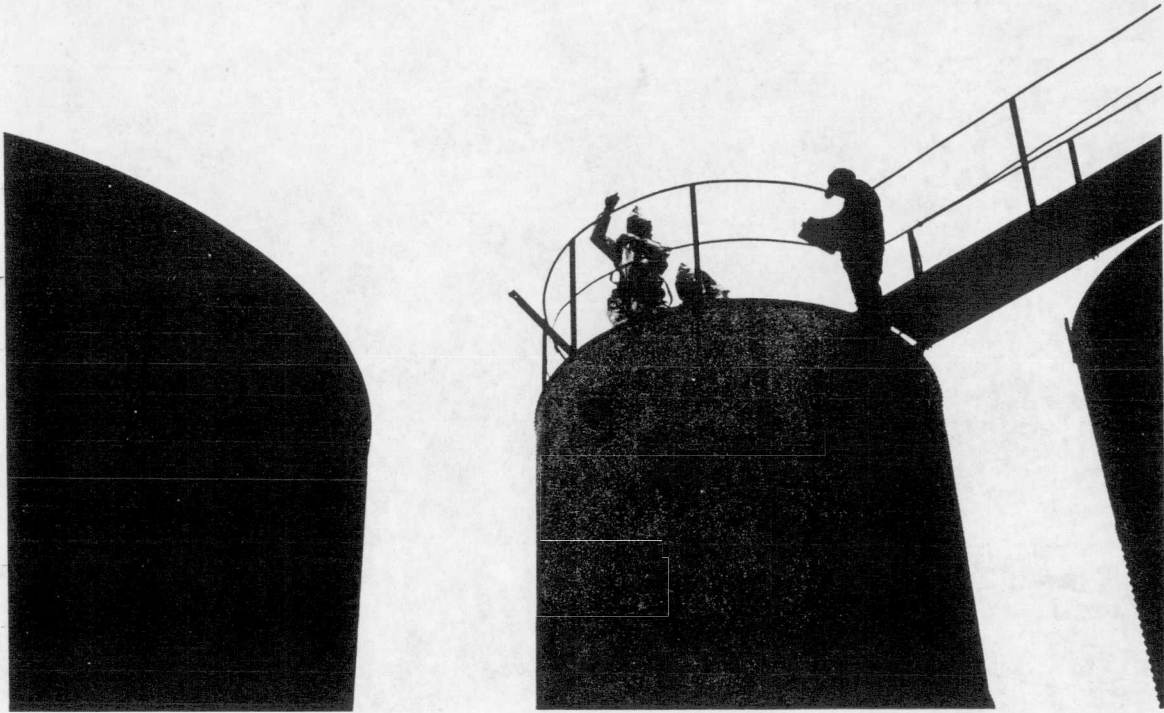




SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 222 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1030 DIRECTION: NW
 STANDING POOL OF WATER WITH SHEEN, SOUTH OF TANKS.

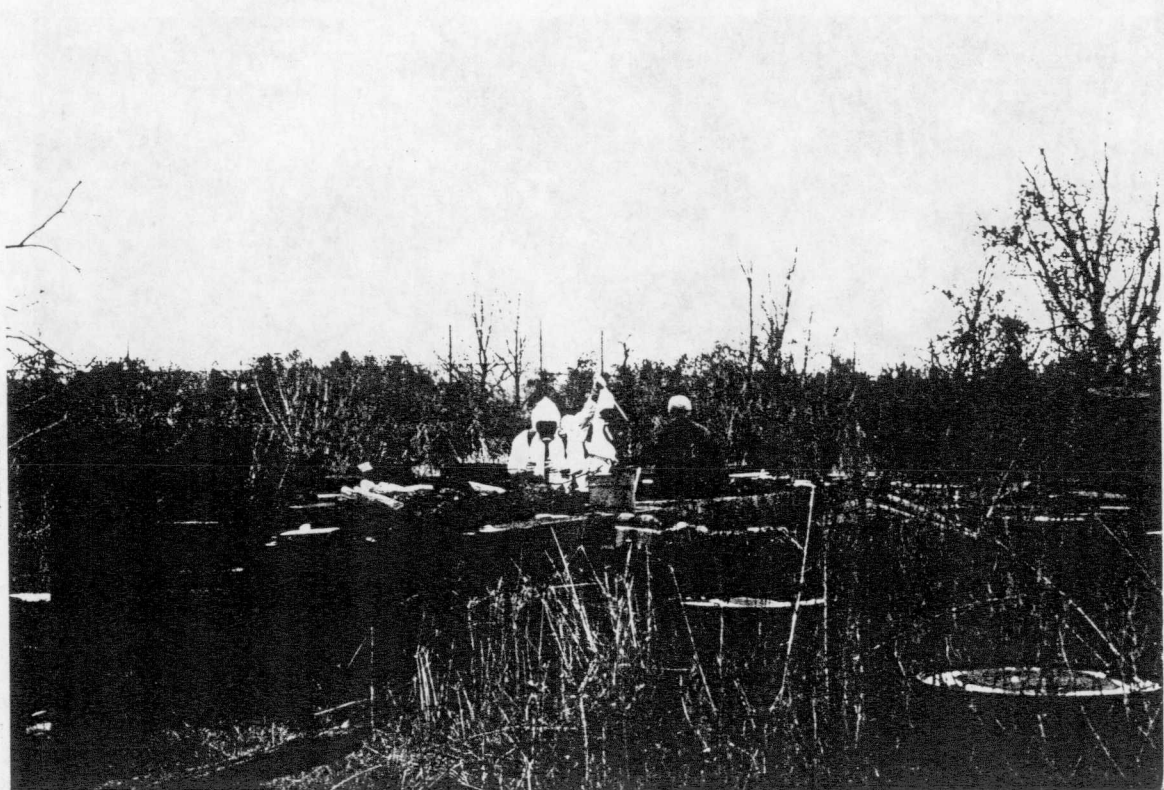
SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 302 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1100 DIRECTION: N
 SHEEN ON DRAINAGE TRENCH EAST OF TANKS T18 AND EBT.

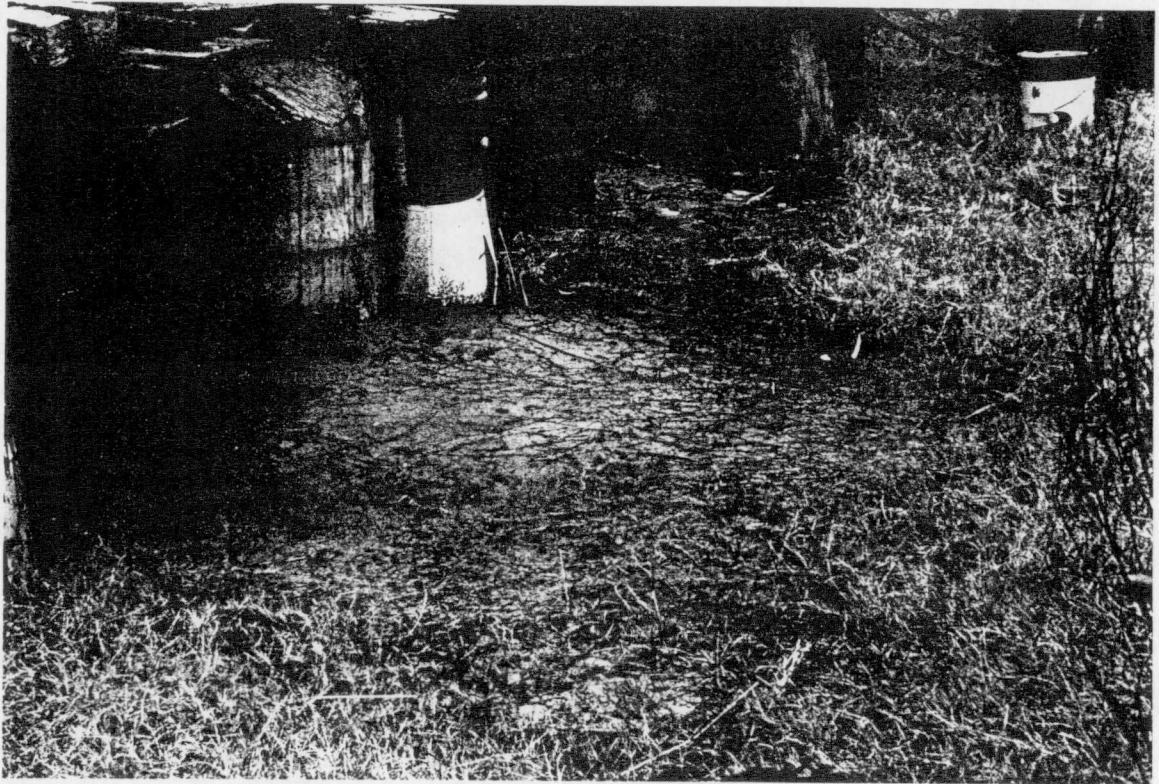




SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 306 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1103 DIRECTION: SE
 TATS SAMPLING TANK EBT.

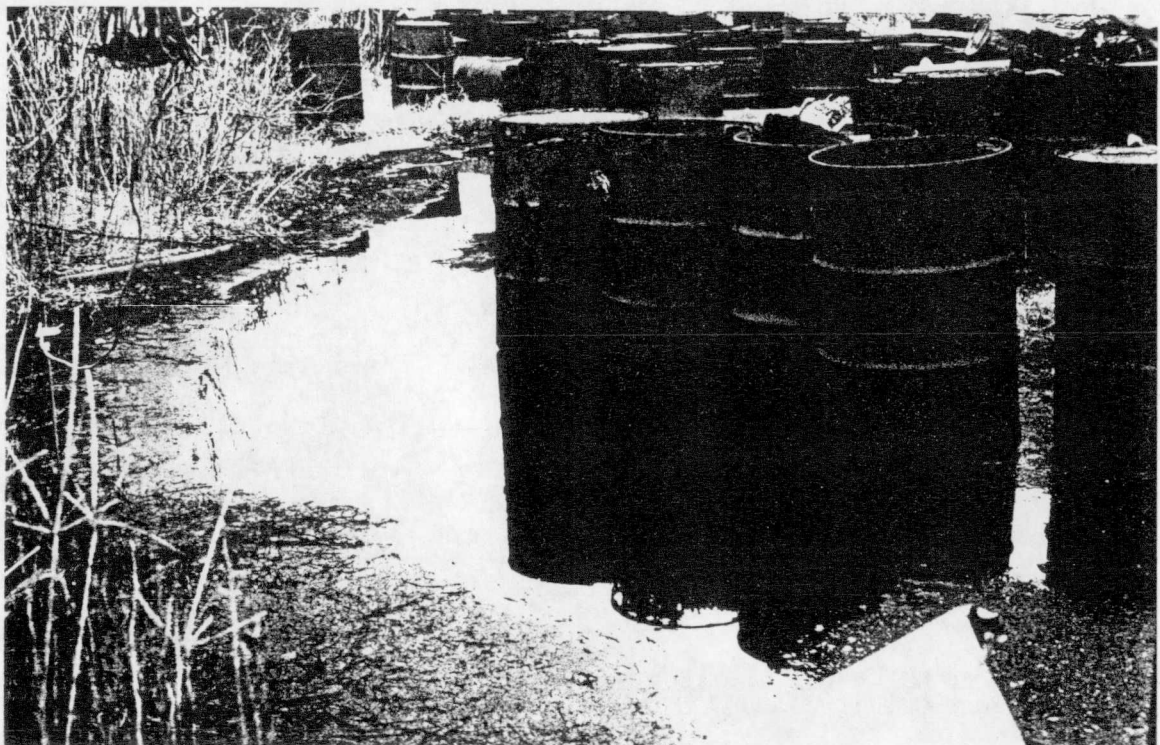
SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 307 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1150 DIRECTION: SE
 TATS SAMPLING DRUMS WITH PROPERTY OWNER OBSERVING.





SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 217 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1024 DIRECTION: N
 DEAD VEGETATION AND STAINED SOIL NEAR DRUMS,
 EAST OF WAREHOUSE.

SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 218 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1025 DIRECTION: S
 DEAD VEGETATION AND STAINED SOIL NEAR DRUMS,
 SE OF WAREHOUSE.





SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 220 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1028 DIRECTION: E
 WATER DRAINAGE THROUGH DRUM AREA SOUTH OF WAREHOUSE.

SITE NAME: EMCHEM CORPORATION TDD#: T06-9210-079
 PHOTO#: 221 PHOTOGRAPHER\WITNESS: REDDY/HAGLUND
 DATE: 01/12/93 TIME: 1029 DIRECTION: SE
 BERMED AREA SOUTH OF TANK BATTERY (LANDFILL).



ATTACHMENT D

Unused Photographs

ATTACHMENT D

UNUSED PHOTOGRAPHS

ATTACHMENT E

Negatives

(Included in the TAT File Copy of the Report)

ATTACHMENT E

NEGATIVES (Included in the TAT File Copy of Report)

ATTACHMENT F

Quality Assurance Sampling Plan

Sampling QA/QC Work Plan

Emchem Corporation

Prepared by
Ecology And Environment, Inc.

EPA Project No.: 4L
Contractor Work Order No.: T06-9210-079
EPA Contract No.: 68-W0-0037

Approvals

Ecology And Environment, Inc.

EPA

Megan Fedders 1/11/93

Megan F. Fedders Date
Task Leader/Project Manager

Warren Zehner
On-Scene Coordinator

Date

Jennifer Shields 1/11/93

Jennifer Shields Date
ATATL/Project Director

1.0 BACKGROUND

The suspected contamination is a result of leakage from tanks and drums present on-site. In addition, one area appears to have been used as a deliberate dumping space for chemical waste.

The following information is known about the site:

The site is located at 4308 Rice Dryer Road in Pearland, Brazoria County, Texas. The nearest residents are located within 0.2 miles to the north of the site. In addition, businesses are located adjacent to the site to the east and west.

Emchem is a chemical manufacturing site on 1 acre which had been operating for an unknown period of time and has been inoperative since 1989.

The types of material handled at this site were petroleum products related to the distillation of naphtha still bottoms and the manufacture of tetraethylene glycol.

The volume of contaminated materials to be addressed is unknown. Approximately twenty-one tanks of unknown contents are present. In addition 150-200 deteriorating drums are present outside. A warehouse on-site contains unknown materials.

The contaminants of concern are organic chemicals, resulting from the distillation of naphtha bottoms and the production of tetraethylene glycol. Previous investigations have identified high concentrations of naphthalene, phenanthrene, xylene, pyrene, and other non-volatile organic compounds in the soil.

The basis of this information may be found in a report by the Texas Water Commission which revealed concentrations of organic chemicals in quantities over 5100 ppm in soil on-site. Small amounts of lead and chromium in soil have also been identified.

2.0 DATA USE OBJECTIVES

The objective of this project / sampling event is to determine the presence of contamination for the purpose of site characterization/determination of possible health or environmental threat.

If applicable, the data will be evaluated against federal and/or state action levels for soil concentrations of heavy metals and/or organic compounds.

3.0 QUALITY ASSURANCE OBJECTIVES

As identified in Sections 1.0 and 2.0 the objective of this project/event applies to the following parameters:

Parameter	QA Objective	Matrix	Intended Use Of Data
BNA	QA2	Drum/Tank Material	Site Characterization
VOA	QA2	Drum/Tank Material	Site Characterization
PCB/Pest	QA2	Drum/Tank Material	Site Characterization
Metals	QA2	Drum/Tank Material	Site Characterization
Flashpoint	QA2	Drum/Tank Material	Site Characterization
Hazcatting	QA1	Drum/Tank Material	Screening
BNA	QA2	Soil	Site Characterization
VOA	QA2	Soil	Site Characterization
PCB/Pest	QA2	Soil	Site Characterization
Metals	QA2	Soil	Site Characterization

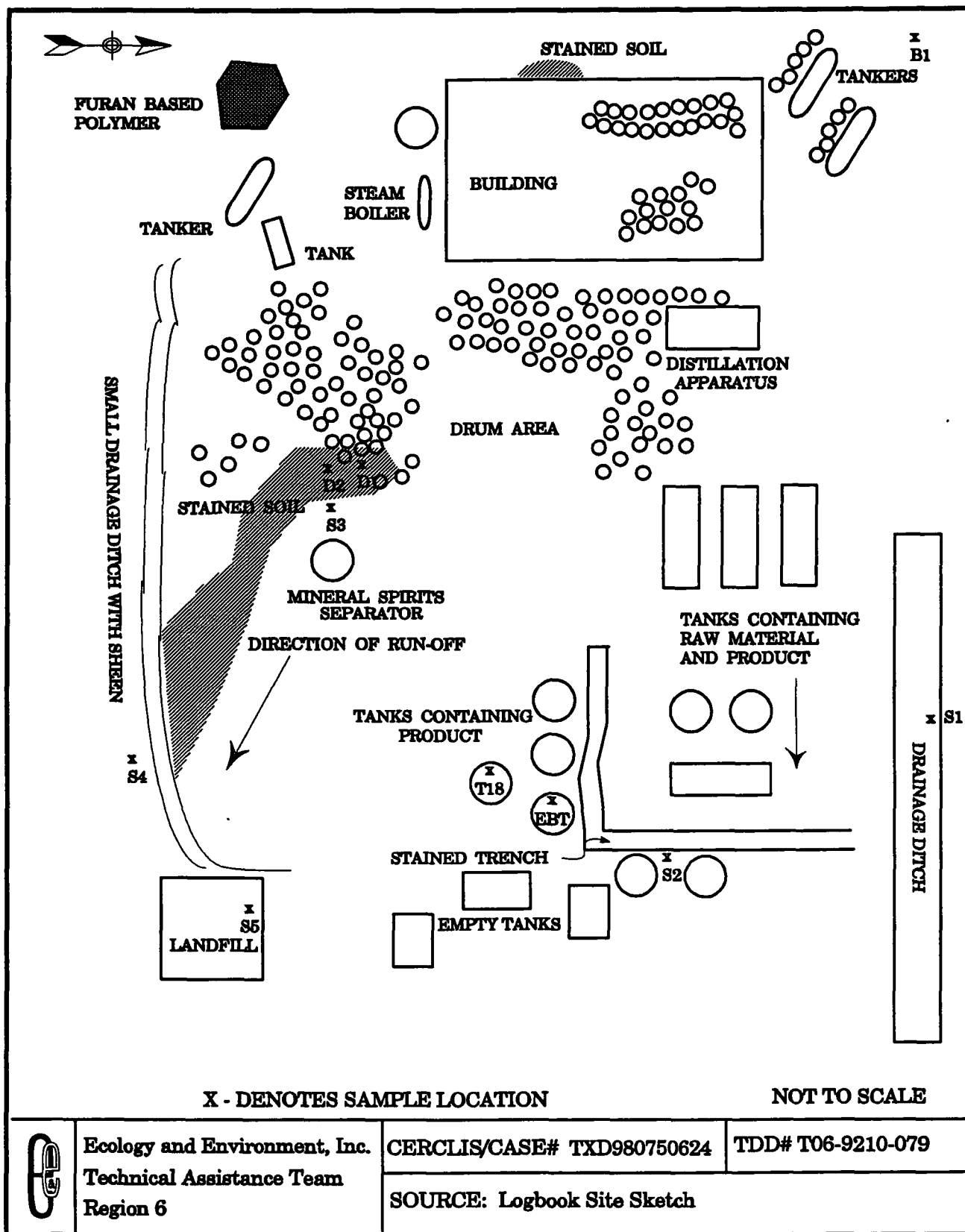
4.0 APPROACH AND SAMPLING METHODOLOGIES

4.1 Sampling Equipment

The following equipment will be utilized to obtain environmental samples from the respective media/matrix:

Parameter/ Matrix	Sampling Equipment	Fabrication	Dedicated

All:			
Tank Material	Coliwas	Glass	Yes
Tank Material	Sludge Judge	Polyethylene	Yes
Drum Material	Drum Thief	Glass	Yes
Soil	Trowel	Stainless Steel	Yes
Soil	Pie Pan	Aluminum	Yes



**FIGURE 4-1 - SAMPLE LOCATION MAP
EMCHEM CORPORATION
PEARLAND, BRAZORIA COUNTY, TEXAS**

4.2 Sampling Design

The sampling design is depicted on the attached Sample Location Map (Figure 4-1) and is based on the following rationale:

The soil sampling will target contaminated areas to establish if off-site migration of contaminants is occurring. One background sample will be taken and five others from the locations indicated.

Samples of containerized material will be taken based on hazcat results of accessible materials.

4.3 Standard Operating Procedures

4.3.1 Sample Documentation

All sample documents will be completed legibly, in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialling the error.

FIELD LOGBOOK

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries, and should include (at a minimum) the following:

1. Site name and project number.
2. Name(s) of personnel on-site.
3. Dates and times of all entries (military time preferred).
4. Descriptions of all site activities, including site entry and exit times.
5. Noteworthy events and discussions.
6. Weather conditions.
7. Site observations.
8. Identification and description of samples and locations.
9. Subcontractor information and names of on-site personnel.
10. Date and time of sample collections, along with chain of custody information.
11. Record of photographs.
12. Site sketches.

SAMPLE LABELS

Sample labels will clearly identify the particular sample, and should include the following:

1. Site name and number.
2. Time and date sample was taken.
3. Sample preservation.
4. Analysis requested.

Optional, but pertinent, information is the sample location. Sample labels will be securely affixed to the sample container. Tie-on labels can be used if properly secured.

CHAIN OF CUSTODY RECORD

A Chain of Custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a locked container sealed with a Custody Seal.

The Chain of Custody record should include (at minimum) the following:

1. Sample identification number.
2. Sample information.
3. Sample location.
4. Sample date.
5. Name(s) and signature(s) of sampler(s).
6. Signature(s) of any individual(s) with control over samples.

CUSTODY SEALS

Custody Seals demonstrate that a sample container has not been tampered with, or opened.

The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook.

4.3.2 Sampling SOPs

Drum Sampling

Prior to sampling, drums must be inventoried, staged, and opened. Inventory entails recording visual qualities of each drum and any characteristics pertinent to the contents classification. Staging involves the organization, and sometimes consolidation of drums which have similar wastes or characteristics. Opening of closed drums can be performed manually or remotely. Remote drum opening is recommended for worker safety.

The most widely used method of sampling a drum involves the use of a glass thief. This method is quick, simple, relatively inexpensive, and requires no decontamination. The thief is inserted into the drum until a solid layer or bottom of the drum is encountered. The waste is allowed to equilibrate in the sample tube, which is then capped and removed for discharge by gravity into the sample container.

Tank Sampling

The safe collection of a representative sample from a tank should be the criteria for selecting sample locations. A representative sample can be collected using techniques and/or equipment that are designed for obtaining liquids or sludges from various depths. The structure and characteristics of storage tanks present problems with collection of samples from more than one location; therefore, the selection of sampling devices is important.

Depending on the type of vessel and characteristics of the material to be sampled, one can choose bailers, glass thieves, bacon bombs, sludge judges, COLIWASAs, or subsurface grab samplers to collect the sample. For depths of less than 5-ft., a bailer, COLIWASA, or sludge judge is used. Sludge judges, subsurface grab samplers, bailers, and bacon bombs can be used for depths greater than 5-ft. A sludge judge or bacon bomb can be used to determine if the tank consists of various strata.

All sample locations should be surveyed for air quality prior to sampling. At no time should sampling continue with an LEL reading greater than 25%.

Soil Sampling

Soil samples will be collected using stainless steel trowels. Aluminum pie pans will be used to homogenize and dry the soil as much as possible before placement in the sample container. Grass, rocks, and other debris in the sample will be removed.

4.3.3 Sample Handling and Shipment

Each of the sample bottles will be sealed and labeled according to the following protocol. Caps will be secured with custody seals. Bottle labels will contain all required information including site name and sample number, time and date of collection, analysis requested, and preservative used. Sealed bottles will be placed in large metal or plastic coolers, and padded with an absorbent material such as vermiculite.

All sample documents will be affixed to the underside of each cooler lid. The lid will be sealed and affixed on at least two sides with custody seals so that any sign of tampering is easily visible.

4.4 Schedule of Activities

Table 1: Proposed Schedule of Work

Start Date	Activity	End Date
-----	-----	-----
11/06/92	Drive-By	11/06/92
01/12/93	Soil Sampling	01/12/93
01/12/93	Drum/Tank Sampling	01/13/93

5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA On-Scene Coordinator, Warren Zehner, will provide overall direction to Ecology And Environment, Inc. staff concerning project sampling needs, objectives and schedule.

The Ecology And Environment, Inc. Task Leader, Megan F. Fedders, is the primary point of contact with the EPA On-Scene Coordinator. The Task Leader is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks, including reporting and deliverables.

As Site QC Coordinator, Megan Fedders is responsible for ensuring field adherence to the Sampling QA/QC Plan and recording any deviations. The Site QC Coordinator is also the primary

project team contact with the lab

The following sampling personnel will work on this project:

Personnel -----	Responsibility -----
Megan F. Fedders	Project Manager
Roberta Haglund	Site Safety Officer
Jenniffier Shields	Project Director
Satish Reddy	Team Member
David Beeson	Team Member

The following laboratories will be providing the following analyses:

Lab Name / Location -----	Lab Type -----	Parameters -----
NDRC Laboratories 11155 S. Main Houston, TX 77025	Analytical	VOA, BNA, Metals PCBs/Pests Flashpoint

6.0 QUALITY ASSURANCE REQUIREMENTS

The following requirements apply to the respective QA Objectives and parameters identified in Section 3.0:

The following QA Protocols for QA1 data are applicable to all sample matrices and include:

1. Provide sample documentation in the form of field logbooks, the appropriate field data sheets and chain of custody records.
2. All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook.
3. The detection limit will be determined and recorded, along with the data, where appropriate.

The following QA Protocols for QA2 data are applicable to all sample matrices and include:

1. Provide sample documentation in the form of field logbooks, the appropriate field data sheets and chain of custody records. Chain of custody records are optional for field screening locations.
2. All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook.
3. The detection limit will be determined and recorded, along with the data, where appropriate.
4. Document sample holding times; this includes documentation of sample collection and analysis dates.
5. Provide initial and continuing instrument calibration data.
6. For soil, sediment and water samples, include field blanks and trip blanks, as specified in the attached table.
7. Performance Evaluation samples are optional, if available.
8. Choose any one or combination of the following three options:
 1. Definitive identification - confirm the identification of analytes on 10% of the screened (field or lab) or 100% of the unscreened samples via an EPA-approved method; provide documentation such as gas chromatograms, mass spectra, etc.
 2. Quantitation - provide documentation for quantitative results from screening and the EPA-approved verification method (for screened samples) or just the quantitative results (in the case of unscreened samples).
 3. Analytical error determination - determine the analytical error by calculating the precision, accuracy, and coefficient of variation on a subset of the screened or all of the unscreened samples using an EPA-approved method.

7.0 DELIVERABLES

The Ecology And Environment, Inc. Task Leader, Megan F. Fedders, will maintain contact with the EPA On-Scene Coordinator, Warren Zehner, to keep him/her informed about the technical and financial progress of this project. This communication will commence with the issuance of the work assignment and project scoping meeting. Activities under this project will be reported in

status and trip reports and other deliverables (e.g., analytical reports, final reports) described herein. Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

Status Reports

A status report will be prepared on a monthly schedule to provide a detailed accounting of what has occurred, and what is planned to occur for the sampling event. Information will be provided on time and date of major events and samples taken.

Maps/Figures

The following illustrations will be provided:

Site Location Map

Site Sketch with Sample Locations

Analysis

This sampling event requires analytical services. Sample results, raw data, QA/QC data, chain of custody information, and a data validation report will be provided in the project report.

Data Review

A review of the data generated under this plan will be undertaken. The assessment of data acceptability or useability will be provided separately, or as part of the analytical report.

Analytical Report

An analytical report will be prepared for samples analyzed under this plan. Information regarding the analytical methods or procedures employed, laboratory correspondence, analytical bids, purchase requisition and purchase order information will be provided within this deliverable.

Final Report

A (draft) final report will be prepared to correlate available background information with data generated under this sampling event and identify supportable conclusions and recommendations which satisfy the objectives of this sampling QA/QC plan.

8.0 DATA VALIDATION

QA1

QA1 data need only be evaluated for calibration and detection limits.

QA2

Data generated under this QA/QC Sampling Plan will be evaluated accordingly with appropriate criteria contained in the Removal Program Data Validation Procedures which accompany OSWER Directive #9360.4-1.

The results of 10% of the samples in the analytical data packages should be evaluated for all of the elements listed in Section 6.0 of the QA/QC Sampling Plan. The holding times, blank contamination, and detection capability will be reviewed for all remaining samples.

9.0 ATTACHMENTS

DETECTION LIMITS

9.1 EPA Method 8420 Practical Quantitation Limits

9.2 EPA Method 8270 Practical Quantitation Limits

9.3 CLP Contract-Required Quantitation Limits

TABLE 2. PRACTICAL QUANTITATION LIMITS (PQL) FOR VOLATILES

TATION LIMITS (PQL) FOR VOLATILES

ORGANICS^a

Volatiles	CAS Number	Practical Quantitation Limits ^b	
		Ground water	Low Soil/Sediment
		ug/L	ug/Kg
1. Chloromethane	74-87-3	10	10
2. Bromomethane	74-83-9	10	10
3. Vinyl Chloride	75-01-4	10	10
4. Chloroethane	75-00-3	10	10
5. Methylene Chloride	75-09-2	5	5
6. Acetone	67-64-1	100	100
7. Carbon Disulfide	75-15-0	5	5
8. 1,1-Dichloroethene	75-35-4	5	5
9. 1,1-Dichloroethane	75-35-3	5	5
10. trans-1,2-Dichloroethene	156-60-5	5	5
11. Chloroform	67-66-3	5	5
12. 1,2-Dichloroethane	107-06-2	5	5
13. 2-Butanone	78-93-3	100	100
14. 1,1,1-Trichloroethane	71-55-6	5	5
15. Carbon Tetrachloride	56-23-5	5	5
16. Vinyl Acetate	108-05-4	50	50
17. Bromodichloromethane	75-27-4	5	5
18. 1,1,2,2-Tetrachloroethane	79-34-5	5	5
19. 1,2-Dichloropropane	78-87-5	5	5
20. trans-1,3-Dichloropropene	10061-02-6	5	5
21. Trichloroethene	79-01-6	5	5
22. Dibromochloromethane	124-48-1	5	5
23. 1,1,2-Trichloroethane	79-00-5	5	5
24. Benzene	71-43-2	5	5
25. cis-1,3-Dichloropropene	10061-01-5	5	5
26. 2-Chloroethyl Vinyl Ether	110-75-8	10	10
27. Bromoform	75-25-2	5	5
28. 2-Hexanone	591-78-6	50	50
29. 4-Methyl-2-pentanone	108-10-1	50	50
30. Tetrachloroethene	127-18-4	5	5

TABLE 2. - Continued

Volatiles	CAS Number	Practical Quantitation Limits ^b	
		Ground water	Low Soil/Sediment
		ug/L	ug/Kg
31. Toluene	108-88-3	5	5
32. Chlorobenzene	108-90-7	5	5
33. Ethyl Benzene	100-41-4	5	5
34. Styrene	100-42-5	5	5
35. Total Xylenes		5	5

^aSample PQLs are highly matrix-dependent. The PQLs listed herein are provided for guidance and may not always be achievable. See the following information for further guidance on matrix-dependent PQLs.

^bPQLs listed for soil/sediment are based on wet weight. Normally data is reported on a dry weight basis; therefore, PQLs will be higher, based on the % moisture in each sample.

<u>Other Matrices:</u>	<u>Factor¹</u>
Water miscible liquid waste	50
High-level soil & sludges	125
Non-water miscible waste	500

¹PQL = [PQL for ground water (Table 2)] X [Factor]. For non-aqueous samples, the factor is on a wet-weight basis.

TABLE 2. PRACTICAL QUANTIFICATION LIMITS (PQL) FOR SEMIVOLATILE ORGANICS**

Semivolatiles	CAS Number	Practical Quantitation Limits*	
		Ground Water	Low Soil/Sediment ¹
		ug/L	ug/Kg
Phenol	108-95-2	10	660
bis(2-Chloroethyl) ether	111-44-4	10	660
2-Chlorophenol	95-57-8	10	660
1,3-Dichlorobenzene	541-73-1	10	660
1,4-Dichlorobenzene	106-46-7	10	660
Benzyl Alcohol	100-51-6	20	1300
1,2-Dichlorobenzene	95-50-1	10	660
2-Methylphenol	95-48-7	10	660
bis(2-Chloroisopropyl) ether	39638-32-9	10	660
4-Methylphenol	106-44-5	10	660
N-Nitroso-Di-N-propylamine	621-64-7	10	660
Hexachloroethane	67-72-1	10	660
Nitrobenzene	98-95-3	10	660
Isophorone	78-59-1	10	660
2-Nitrophenol	88-75-5	10	660
2,4-Dimethylphenol	105-67-9	10	660
Benzoic Acid	65-85-0	50	3300
bis(2-Chloroethoxy) methane	111-91-1	10	660
2,4-Dichlorophenol	120-83-2	10	660
1,2,4-Trichlorobenzene	120-82-1	10	660
Naphthalene	91-20-3	10	660
4-Chloroaniline	106-47-8	20	1300
Hexachlorobutadiene	87-68-3	10	660
4-Chloro-3-methylphenol	59-50-7	20	1300
2-Methylnaphthalene	91-57-6	10	660
Hexachlorocyclopentadiene	77-47-4	10	660
2,4,6-Trichlorophenol	88-06-2	10	660
2,4,5-Trichlorophenol	95-95-4	10	660

TABLE 2. PRACTICAL QUANTITATION LIMITS (PQL) FOR SEMIVOLATILE ORGANICS**
(Continued)

Semivolatiles	CAS Number	Practical Quantitation Limits*	
		Ground Water	Low Soil/Sediment ¹
		ug/L	ug/Kg
2-Chloronaphthalene	91-58-7	10	660
2-Nitroaniline	88-74-4	50	3300
Dimethyl phthalate	131-11-3	10	660
Acenaphthylene	208-96-8	10	660
3-Nitroaniline	99-09-2	50	3300
Acenaphthene	83-32-9	10	660
2,4-Dinitrophenol	51-28-5	50	3300
4-Nitrophenol	100-02-7	50	3300
Dibenzofuran	132-64-9	10	660
2,4-Dinitrotoluene	121-14-2	10	660
2,6-Dinitrotoluene	606-20-2	10	660
Diethylphthalate	84-66-2	10	660
4-Chlorophenyl phenyl ether	7005-72-3	10	660
Fluorene	86-73-7	10	660
4-Nitroaniline	100-01-6	50	3300
4,6-Dinitro-2-methylphenol	534-52-1	50	3300
N-Nitrosodiphenylamine	86-30-6	10	660
4-Bromophenyl phenyl ether	101-55-3	10	660
Hexachlorobenzene	118-74-1	10	660
Pentachlorophenol	87-86-5	50	3300
Phenanthrene	85-01-8	10	660
Anthracene	120-12-7	10	660
Di-n-butylphthalate	84-74-2	10	660
Fluoranthene	206-44-0	10	660
Pyrene	129-00-0	10	660
Butyl benzyl phthalate	85-68-7	10	660
3,3'-Dichlorobenzidine	91-94-1	20	1300
Benzo(a)anthracene	56-55-3	10	660
bis(2-ethylhexyl)phthalate	117-81-7	10	660

TABLE 2. PRACTICAL QUANTITATION LIMITS (PQL) FOR SEMI-VOLATILE ORGANICS**
(Continued)

Semi-Volatiles	CAS Number	Practical Quantitation Limits*	
		Ground Water	Low Soil/Sediment ¹
		ug/L	ug/Kg
Chrysene	218-01-9	10	660
D1-n-octyl phthalate	117-84-0	10	660
Benzo(b)fluoranthene	205-99-2	10	660
Benzo(k)fluoranthene	207-08-9	10	660
Benzo(a)pyrene	50-32-8	10	660
Indeno(1,2,3-cd)pyrene	193-39-5	10	660
Dibenz(a,h)anthracene	53-70-3	10	660
Benzo(g,h,i)perylene	191-24-2	10	660

*PQLs listed for soil/sediment are based on wet weight. Normally data is reported on a dry weight basis, therefore, PQLs will be higher based on the % moisture in each sample. This is based on a 30-g sample and gel permeation chromatography cleanup.

**Sample PQLs are highly matrix-dependent. The PQLs listed herein are provided for guidance and may not always be achievable.

<u>Other Matrices</u>	<u>Factor¹</u>
Medium-level soil and sludges by sonicator	7.5
Non-water-miscible waste	75

$$^1\text{PQL} = [\text{PQL for Ground Water (Table 2)}] \times [\text{Factor}].$$

Target Compound List (TCL) and
Contract Required Quantitation Limits (CROL)*

<u>Volatiles</u>	<u>CAS Number</u>	<u>Quantitation Limits</u> <u>(mg/Kg)</u>
1. Chloromethane	74-87-3	5.0
2. Bromomethane	74-83-9	5.0
3. Vinyl Chloride	75-01-4	5.0
4. Chloroethane	75-00-3	5.0
5. Methylene Chloride	75-09-2	2.5
6. Acetone	67-64-1	5.0
7. Carbon Disulfide	75-15-0	2.5
8. 1,1-Dichloroethene	75-35-4	2.5
9. 1,1-Dichloroethane	75-34-3	2.5
10. 1,2-Dichloroethene (total)	540-59-0	2.5
11. Chloroform	67-66-3	2.5
12. 1,2-Dichloroethane	107-06-2	2.5
13. 2-Butanone	78-93-3	5.0
14. 1,1,1-Trichloroethane	71-55-6	2.5
15. Carbon Tetrachloride	56-23-5	2.5
16. Vinyl Acetate	108-05-4	5.0
17. Bromodichloromethane	75-27-4	2.5
18. 1,2-Dichloropropane	78-87-5	2.5
19. cis-1,3-Dichloropropene	10061-01-5	2.5
20. Trichloroethene	79-01-6	2.5
21. Dibromochloromethane	124-48-1	2.5
22. 1,1,2-Trichloroethane	79-00-5	2.5
23. Benzene	71-43-2	2.5
24. trans-1,3-Dichloropropene	10061-02-6	2.5
25. Bromoform	75-25-2	2.5
26. 4-Methyl-2-pentanone	108-10-1	5.0
27. 2-Hexanone	591-78-6	5.0
28. Tetrachloroethene	127-18-4	2.5
29. 1,1,2,2-Tetrachloroethane	79-34-5	2.5
30. Toluene	108-88-3	2.5
31. Chlorobenzene	108-90-7	2.5
32. Ethylbenzene	100-41-4	2.5
33. Styrene	100-42-5	2.5
34. Xylene (Total)	1330-20-7	2.5

*Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

Target Compound List (TCL) and
Contract Required Quantitation Limits (CROL)*

Extractables	CAS Number	Quantitation Limits (mg/Kg)
35. Phenol	108-95-2	20
36. bis(2-Chloroethyl) ether	111-44-4	20
37. 2-Chlorophenol	95-57-8	20
38. 1,3-Dichlorobenzene	541-73-1	20
39. 1,4-Dichlorobenzene	106-46-7	20
40. Benzyl alcohol	100-51-6	20
41. 1,2-Dichlorobenzene	95-50-1	20
42. 2-Methylphenol	95-48-7	20
43. bis(2-Chloroisopropyl) ether	108-60-1	20
44. 4-Methylphenol	106-44-5	20
45. N-Nitroso-di-n- dipropylamine	621-64-7	20
46. Hexachloroethane	67-72-1	20
47. Nitrobenzene	98-95-3	20
48. Isophorone	78-59-1	20
49. 2-Nitrophenol	88-75-5	20
50. 2,4-Dimethylphenol	105-67-9	20
51. Benzoic acid	65-85-0	100
52. bis(2-Chloroethoxy) methane	111-91-1	20
53. 2,4-Dichlorophenol	120-83-2	20
54. 1,2,4-Trichlorobenzene	120-82-1	20
55. Naphthalene	91-20-3	20
56. 4-Chloroaniline	106-47-8	20
57. Hexachlorobutadiene	87-68-3	20
58. 4-Chloro-3-methylphenol (para-chloro-meta-cresol)	59-50-7	20
59. 2-Methylnaphthalene	91-57-6	20
60. Hexachlorocyclopentadiene	77-47-4	20
61. 2,4,6-Trichlorophenol	88-06-2	20
62. 2,4,5-Trichlorophenol	95-95-4	100
63. 2-Chloronaphthalene	91-58-7	20
64. 2-Nitroaniline	88-74-4	100
65. Dimethylphthalate	131-11-3	20
66. Acenaphthylene	208-96-8	20
67. 2,6-Dinitrotoluene	606-20-2	20
68. 3-Nitroaniline	99-09-2	100

(continued)

Extractables		CAS Number	Quantitation Limits (mg/Kg)
69.	Acenaphthene	83-32-9	20
70.	2,4-Dinitrophenol	51-28-5	100
71.	4-Nitrophenol	100-02-7	100
72.	Dibenzofuran	132-64-9	20
73.	2,4-Dinitrotoluene	121-14-2	20
74.	Diethylphthalate	84-66-2	20
75.	4-Chlorophenyl-phenylether	7005-72-3	20
76.	Fluorene	86-73-7	20
77.	4-Nitroaniline	100-01-6	100
78.	4,6-Dinitro-2-methylphenol	534-52-1	100
79.	N-nitrosodiphenylamine (1)	86-30-6	20
80.	4-Bromophenyl-phenylether	101-55-3	20
81.	alpha-BHC	319-84-6	20
82.	Hexachlorobenzene	118-74-1	20
83.	beta-BHC	319-85-7	20
84.	Pentachlorophenol	87-86-5	100
85.	gamma-BHC (Lindane)	58-89-9	20
86.	Phenanthrene	85-01-8	20
87.	Anthracene	120-12-7	20
88.	delta-BHC	319-86-8	20
89.	Heptachlor	76-44-8	20
90.	Aldrin	309-00-2	20
91.	Di-n-butylphthalate	84-74-2	20
92.	Fluoranthene	206-44-0	20
93.	Heptachlor epoxide	1024-57-3	20
94.	Monochlorobiphenyl	27323-18-8	100
95.	Dichlorobiphenyl	2051-60-7	100
96.	Trichlorobiphenyl	2051-61-8	100
97.	Tetrachlorobiphenyl	2051-62-9	100
98.	Pyrene	129-00-0	20
99.	gamma-Chlordane	5103-74-2	20
100.	Endosulfan I	959-98-8	20
101.	alpha-Chlordane	5103-71-9	20
102.	4,4'-DDE	72-55-9	20
103.	Dieldrin	60-57-1	20
104.	Hexachlorobiphenyl	26601-64-9	100
105.	Pentachlorobiphenyl	25429-29-2	100

(continued)

Extractables	CAS Number	Quantitation Limits (mg/Kg)
106. Endrin	72-20-8	20
107. Endosulfan II	33213-65-9	20
108. 4,4'-DDD	72-54-8	20
109. Heptachlorobiphenyl	28655-71-2	100
110. Butylbenzylphthalate	85-68-7	20
111. Endosulfan sulfate	1031-07-8	20
112. 4,4'-DDT	50-29-3	20
113. Endrin ketone	53494-70-5	20
114. Benzo(a)anthracene	56-55-3	20
115. Methoxychlor	72-43-5	20
116. Chrysene	218-01-9	20
117. Octachlorobiphenyl	55722-26-4	200
118. 3,3'-Dichlorobenzidine	91-94-1	40
119. bis(2-Ethylhexyl)phthalate	117-81-7	20
120. Nonachlorobiphenyl	53742-07-7	200
121. Decachlorobiphenyl	2051-24-3	200
122. Di-n-octylphthalate	117-84-0	20
123. Benzo(b)fluoranthene	205-99-2	20
124. Benzo(k)fluoranthene	207-08-9	20
125. Benzo(a)pyrene	50-32-8	20
126. Indeno(1,2,3-cd)pyrene	193-39-5	20
127. Dibenz(a,h)anthracene	53-70-3	20
128. Benzo(g,h,i)perylene	191-24-2	20

*Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

Target Compound List (TCL) and
Contract Required Quantitation Limits (CROL)*

<u>Aroclor-Specific/Toxaphene</u> <u>by GC/EC Method</u>	<u>CAS Number</u>	<u>Quantitation Limits</u> <u>(mg/Kg)</u>
129. Toxaphene	8001-35-2	50
130. Aroclor 1016	12674-11-2	10
131. Aroclor 1221	11104-28-2	10
132. Aroclor 1232	11141-16-5	10
133. Aroclor 1242	53469-21-9	10
134. Aroclor 1248	12672-29-6	10
135. Aroclor 1254	11097-69-1	10
136. Aroclor 1260	11096-82-5	10

*Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

TABLE 1.

**HIGH CONCENTRATION INORGANIC
TARGET ANALYTE LIST (TAL)**

Analyte	Contract Required Quantitation Limit ^{1, 2} (mg/Kg)
Aluminum	80
Antimony	20
Arsenic	5
Barium	80
Beryllium	5
Cadmium	10
Calcium	80
Chromium	10
Cobalt	20
Copper	40
Iron	20
Lead	10
Magnesium	80
Manganese	10
Mercury	0.3
Nickel	20
Selenium	5
Silver	10
Sodium	80
Thallium	20
Vanadium	20
Zinc	10
Cyanide	1.5
Conductivity	3.0 (μ mhos/cm)
pH	NA

- (1) The analytical methods specified in SOW Exhibit D must be utilized and the achieved method detection limits must meet the Contract Required Quantitation Limits (CRQL) requirements. Higher detection levels may only be used in the following circumstance:

If the sample concentration exceeds two times the detection limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the contract required quantitation limit. The method detection limit must be documented as described in Exhibits D and E.

- (2) These CRQLs are the method detection limits (for metals) and the maximum allowable method blank values (for all other parameters) obtained from actual method blank preparations that must be met using the procedure in Exhibits D and E.

ATTACHMENT G

Tank Inventory

ATTACHMENT G - TANK INVENTORY
Emchem Corporation Site
Pearland, Texas

TANK*	CONTENTS	QUANTITY	APPROXIMATE CAPACITY (Gal)
A	Polyethylene glycols	Full	5000
B	Empty	Empty	5000
C	Empty	Empty	10,000
D	Empty	Empty	10,000
E	Empty	Empty	10,000
F	Empty	Empty	5000
B2	Polyethylene glycols	Unknown	3000
MINERAL SPIRITS SEPARATOR	Empty	Empty	7500
S3	Unknown	Full	5000
S4	Unknown	Full	5000
N3	Residual Furan Resin	Residual	5000
S8	Polyethylene glycols	Unknown	10,000
N8	Polyethylene glycols	Unknown	10,000
TBR	Empty	Empty	7500
SA	Polyethylene glycols	Unknown	15,000
NA	Polyethylene glycols	Unknown	15,000
WBT	Polyethylene glycols	Full	17,000
MBT	Polyethylene glycols	Full	17,000
EBT	Polyethylene glycols	Full	17,000
T18	Polyethylene glycols	Full	17,000

* All tank numbers except A-F based on facility owner numbering.

ATTACHMENT H

Copy of Sample Chain of Custody Form

CHAIN OF CUSTODY RECORD

PROJ. NO. T06-9210-079		PROJECT NAME EniChem Corporation				NO. OF CON- TAINERS	<div>Volatiles Organics (9240)</div> <div>BNAs (9270)</div> <div>PCBs/Pest (9300)</div> <div>HP Metals</div> <div>MS/MSD</div> <div>PH and Flashpoint</div> <div>REMARKS</div>					
SAMPLERS: (Signature) Miguel Garcia, Roberto E. Haglund												
STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION							
B1	1/12/93	1230		✓	Background	2	X	X	X	X	X	EPH TAG #
S1		1238		✓	North Ditch	2	X	X	X	X		6-098834
S2		1244		✓	East Ditch	2	X	X	X	X		6-098835
S3		1247		✓	Drum Area	2	X	X	X	X		6-098836
S4		1254		✓	South Ditch	2	X	X	X	X		6-098837
S5		1256		✓	Land fill	2	X	X	X	X		6-098838
D1		1145		✓	Drum #1	2	X	X	X	X		6-098839
D2		1200		✓	Drum #2	2	X	X	X	X		6-098840
EBT		1105		✓	Tank EBT	2	X	X	X	X		6-098841
T18		1125		✓	Tank T18	2	X	X	X	X		6-098842
Relinquished by: (Signature) Miguel Garcia		Date / Time 1/13/93 0852		Received by: (Signature) RIR		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature) RIR		Date / Time 1/13/93 0852		Remarks STANDARD TAT				

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ATTACHMENT I

Data Summary

VOLATILE DATA SUMMARY
Waste Samples
Emchem Corporation Site
Pearland, Texas

Compound*	D1 (mg/Kg)	D2 (mg/Kg)	EBT (mg/Kg)	T18 (mg/Kg)
2-Butanone	13.7J	R	R	R
Benzene	3.01	U	U	U
Ethylbenzene	0.57	U	U	U
Xylenes (Total)	0.69	U	U	U
Tentatively Identified Compound*				
1,2-Dichlorobenzene	U	U	1.80J	U

- J - Indicates quantity is estimated because it is tentatively identified or because quality control criteria were not met.
- R - The sample results are rejected due to deficiencies in quality control criteria. The analyte may or may not be present.
- * - Detection limits for Target Compound List volatiles exceed method Practical Quantitation Limits (PQLs) for all samples (See Data Validation Report and Analytical Data Package).

SEMI-VOLATILE DATA SUMMARY
Waste Samples
Emchem Corporation Site
Pearland, Texas

Tentatively Identified Compound*	D1 (mg/Kg)	D2 (mg/Kg)	EBT (mg/Kg)	T18 (mg/Kg)
2-Methoxyethanol	U	U	3500	U
Butanediol isomer	850J	U	U	U
Chlorobenzene	U	1600	U	U
Crown Ether compound	360J	U	U	U
Pentaoxahedecanol isomers	1300J	1300J	U	U
Triethylene Glycol isomers	43,000J	880J	190,000J	67,000J
Unknown Acid Esters	U	2810J	U	U
Unknown Aliphatic	U	4800J	U	U
Unknown Alkane	470J	23,000J	3400J	1500J
Unknown Amine	1700J	U	U	U
Unknown Glycol Ether	U	U	U	2600J
Unknown Alkyl Compound	U	410J	U	U

J - The associated numerical value is an estimated quantity because it is tentatively identified or because quality control criteria were not met.

U - The material was analyzed for but not detected.

* - No Target Compound List semi-volatiles were found in any waste sample over reported quantitation limits.

Reported quantitation limits exceed the method Practical Quantitation Limits (PQLs) for all samples (See Data Validation Report and Analytical Data Package).

PESTICIDE/PCB DATA SUMMARY
Waste Samples
Emchem Corporation Site
Pearland, Texas

Compound*	D1 (mg/Kg)	D2 (mg/Kg)	EBT (mg/Kg)	T18 (mg/Kg)
Arochlor-1242	U	186	U	U

U - The material was analyzed for but not detected.

* - No pesticides or other PCBs found in any waste sample.

INORGANIC DATA SUMMARY
Waste Samples
Emchem Corporation Site
Pearland, Texas

ANALYTE	D1 (mg/Kg)	D2 (mg/Kg)	EBT (mg/Kg)	T18 (mg/Kg)
Antimony	5.0	6.2	9.4	8.2
Arsenic	0.22	1.42	0.5	0.48
Beryllium	U	U	U	U
Cadmium	1.2	U	1.6	1.6
Chromium	7.4	19.3	16.4	11.7
Copper	U	21.5	U	U
Lead	3.0	5.2	3.5	5.2
Mercury	U	U	U	U
Nickel	1.0	2.4	3.4	2.4
Selenium	U	U	U	U
Silver	U	U	U	U
Thallium	3.4	3.8	7.1	7.8
Zinc	4.0	83.4	3.2	2.2

U - The analyte was analyzed for but not detected.

PHYSICAL DATA SUMMARY
Waste Samples
Emchem Corporation Site
Pearland, Texas

CHARACTERISTIC	D1 (mg/Kg)	D2 (mg/Kg)	EBT (mg/Kg)	T18 (mg/Kg)
pH	12.4	12.6	9.0	10.6
Flashpoint	> 200°F	> 200°F	> 200°F	> 200°F

VOLATILE DATA SUMMARY

**Soil Samples
Emchem Corporation Site
Pearland, Texas**

Compound*	B1 (mg/Kg)	S1 (mg/Kg)	S2 (mg/Kg)	S3 (mg/Kg)	S4 (mg/Kg)	S5 (mg/Kg)
2-Butanone	R	R	R	67J	R	R
Benzene	U	U	U	10.6	U	U
Tolulene	U	U	U	7.6	U	U
Xylenes (Total)	U	U	U	5.7	U	U

- J - Indicates quantity is estimated because it is tentatively identified or because quality control criteria were not met.
- U - The material was analyzed for but not detected.
- R - The sample results are rejected due to deficiencies in quality control criteria. The analyte may or may not be present.
- * - Detection limits for Target Compound List volatiles exceed method Practical Quantitation Limits (PQLs) for all samples (See Data Validation Report and Analytical Data Package).

SEMI-VOLATILE DATA SUMMARY
Soil Samples
Emchem Corporation Site
Pearland, Texas

Compound*	B1 (mg/Kg)	S1 (mg/Kg)	S2 (mg/Kg)	S3 (mg/Kg)	S4 (mg/Kg)	S5 (mg/Kg)
1-Methylnapthalene	U	U	U	U	U	60
Napthalene	2.26	U	2.18	U	U	141,000
2-Methylnapthalene	4.31	U	U	U	U	852
Acenapthene	U	3.04	4.13	U	U	U
Fluorene	U	U	U	U	U	829
Hexachlorobenzene	1.58	1.52	2.17	U	U	U
Phenanthrene	U	2.16	U	U	3.91	3320
Fluoranthene	U	1.34	2.09	U	4.29	874
Pyrene	U	3.44	6.08	U	6.93	2490
Tentatively Identified Compounds**						
2-Hexanol	U	U	U	U	47	U
Dihydro-dimethyl-1H-indene	4.60	U	U	U	U	U
Dihydro-methyl-1H-indene	4.20	U	U	U	U	U
Dihydro-dimethyl-indene	9.20	U	U	U	U	U
Dimethyl-methylethyl-benzene	3.20	U	U	U	U	U
Docasane	13.0	U	U	U	U	U
Ethyl-dimethylbenzene	8.60	U	U	U	U	U
Heptacosane	9.20	U	U	U	U	U
Methyl-hexadecane	3.00	U	U	U	U	U

J - The associated numerical value is an estimated quantity because it is tentatively identified or because quality control criteria were not met.

U - The material was analyzed for but not detected.

* - No other Target Compound List semi-volatiles were found in any soil sample over reported quantitation limits. However, reported quantitation limits exceed the method Practical Quantitation Limits (PQLs) for samples S3 and S5 (See Data Validation Report and Analytical Data Package).

** - Tentatively Identified Compounds include positively identified semi-volatile compounds not found on the Target Compound List.

SEMI-VOLATILE DATA SUMMARY
Soil Samples (Continued)
Emchem Corporation Site
Pearland, Texas

Tentatively Identified Compounds (Continued)**	B1 (mg/Kg)	S1 (mg/Kg)	S2 (mg/Kg)	S3 (mg/Kg)	S4 (mg/Kg)	S5 (mg/Kg)
Methyl-propylbenzene	9.20	U	U	U	U	U
Octadecanoic Acid	59.0	U	U	U	U	U
1,1-Pentachlorobiphenyl	U	3.50	U	U	U	U
Propyl-decane	5.90	U	U	U	U	U
1,1-Tetrachlorobiphenyl	U	2.40	U	U	U	U
Tetramethyl-benzene	3.40	U	U	U	U	U
Hexadecane	U	U	U	U	U	370
Napthalenecarboxylic Acid	U	U	U	U	U	410
Napthalic Anhydride	U	U	U	U	U	200
Phenol Methanone isomer	U	U	U	U	7.10	U
Triethylene Glycol isomers	U	U	U	94.0J	4.00J	U
Trimethyl-benzene isomers	19.6J	U	U	U	U	U
Unknown Alkane	11.0J	1.70J	1.70J	24.0J	U	U
Unknown Alkene	U	4.00J	U	U	U	700J
Unknown Amine	U	U	U	33.0J	260J	U
Unknown Aromatic Hydrocarbon	3.00J	U	1.60J	U	U	U
Medium Petroleum Distillates	U	U	230J	U	U	U

J - The associated numerical value is an estimated quantity because it is tentatively identified or because quality control criteria were not met.

U - The material was analyzed for but not detected.

** - Tentatively Identified Compounds include positively identified semi-volatile compounds not found on the Target Compound List.

PESTICIDE/PCB DATA SUMMARY

**Soil Samples
Emchem Corporation Site
Pearland, Texas**

Compound*	B1 (mg/Kg)	S1 (mg/Kg)	S2 (mg/Kg)	S3 (mg/Kg)	S4 (mg/Kg)	S5 (mg/Kg)
Arochlor-1242	1.40	U	4.50	25.0	8.50	U
Arochlor-1254	U	7.40	2.40	24.0	4.50	U

U - The material was analyzed for but not detected.

* - No pesticides or other PCBs found in any soil sample.

INORGANIC DATA SUMMARY

**Soil Samples
Emchem Corporation Site
Pearland, Texas**

ANALYTE	B1 (mg/Kg)	S1 (mg/Kg)	S2 (mg/Kg)	S3 (mg/Kg)	S4 (mg/Kg)	S5 (mg/Kg)
Antimony	5.2	6.4	3.9	5.3	8.2	4.1
Arsenic	0.36	0.74	1.3	2.44	6.1	0.41
Beryllium	U	U	U	U	U	U
Cadmium	1.2	1.6	1.4	U	1.2	U
Chromium	5.6	13.0	26.0	112	59.2	3.6
Copper	3.6	12.2	19.3	211	115	4.2
Lead	11.8	57.9	103	499	157	26.6
Mercury	0.08	0.11	0.15	0.44	0.38	U
Nickel	2.4	3.4	3.4	23.4	13.2	2.1
Selenium	U	0.10	U	U	U	U
Silver	U	U	U	U	U	U
Thallium	U	3.4	2.0	2.5	1.0	U
Zinc	15.0	101	146	977	366	21.2

U - The analyte was analyzed for but not detected.

ATTACHMENT J
Data Validation Report

DATA VALIDATION REPORT

DATE: February 16, 1993

SITE NAME AND LOCATION: Emchem Corporation Site
Pearland, Brazoria County, Texas

REF: Project TDD: T06-9210-079
Project PAN: ETX0139SAA

PROJECT MANAGER: Megan Fedders, E & E, Houston TX

DATA REVIEWER: Megan Fedders, E & E, Houston, TX

LABORATORY: NDRC Laboratories, Houston, TX

ANALYSES: Drum/Tank Samples:
RCRA Characteristic Tests
Ignitability (EPA Method 1010)
Corrosivity (pH) (EPA Method 9040)

Soil and Drum/Tank Samples:
Volatile Organics (EPA Method 8240)
Semi-Volatile Organics (EPA Method 8270)
Metals (EPA Method 6010/7000 Series)
Pesticides/PCBs (EPA Method 8080)

SAMPLE LIST: Drum/Tank: D1 D2 EBT T18
Soil: B1 S1 S2 S3 S4 S5

Overall Assessment of Data for Use:

The overall usefulness of the data is based on the criteria outlined in the OSWER Directive 9360.4-01, "Quality Assurance/Quality Control Guidance for Removal Activities" (April 1990).

Based upon the information provided, the data are considered acceptable to use at QA Level 2 with the below stated data qualifications.

Data Qualifications:

RCRA Characteristic Tests

No standards exist for review of these analyses. However, all analyses appear to conform to proper laboratory procedures defined in CFR 40 §261.22 for corrosivity (EPA Method 9040) and CFR §261.23 for reactivity (see SW 846 Ch. 7.3).

Inorganic Analyses

COMMENTS: No problems were encountered in the inorganic analyses.

I. Sample Holding Time: Acceptable.

All sample holding times were met.

II. Calibration

A. Initial Calibration: Acceptable.

The percent recovery values for the initial calibration for all analytes fell within the 90-110% control limit.

B. Continuing Calibration: Acceptable.

The percent recovery values for all analytes in each continuing calibration check fell within the 90-110% control limit.

III. Method Blank: Acceptable.

No analytes were detected in laboratory blanks at levels above Instrument Detection Limits (IDL).

IV. ICP Interference Check Sample: Satisfactory.

All ICS analytes of interest had percent recoveries within the 80-120% control limit.

V. Laboratory Control Sample: Acceptable.

The percent recoveries for all laboratory control sample results met QC control limits for all analytes.

VI. Matrix Spike/Matrix Spike Duplicate: Acceptable.

All spike percent recoveries were within the 75-125% advisory limit except Antimony which showed acceptable recovery in a post-digest spike.

VII. Duplicate Analysis:

Relative percent difference values for all analytes were less than 20% for the duplicate analysis.

VII. ICP Serial Dilution: Not required.

An ICP serial dilution was not performed for these sample.

VIII. Sample Results Verification: Acceptable.

A review of 10% of the data verified the accuracy of the quantitation calculations. The reported detection limits reflect concentrations, dilutions, sample weights, etc.

Volatile Organics

COMMENTS: The main problem encountered in volatile organics analysis resulted from dilutions necessary to bring samples within calibration range. This caused elevated detection limits for samples S5, D1, D2, EBT and T18 (See Item X).

I. Sample Holding Time: Acceptable.

All sample holding times were met.

II. GC/MS Tuning: Acceptable.

All tuning check compound mass abundances and ratios were within contract-required limits for volatile analysis.

III. Calibration

A. Initial Calibration: Satisfactory.

All volatile Target Compound List (TCL) compounds were within required 30% limit for Percent Relative Standard Deviation (%RSD). All average Relative Response Factors (RRFs) were above 0.05 except 2-Butanone (0.0435).

ACTION: All positive results for 2-Butanone were qualified as estimated (J). All non-detects have been flagged as rejected (R) as per data validation guidelines.

B. Continuing Calibration: Acceptable.

All TCL compounds were at or above the required RRF criteria of 0.05 for volatiles. All volatile TCL compounds had Relative Percent Difference (RPD) values at or below the required 25%.

IV. Method Blank: Acceptable.

No TCL compounds were detected in the method blank.

V. Surrogate Recoveries: Acceptable.

Percent recoveries (%Rs) for all surrogate compounds for volatile analysis met QC criteria in all samples.

VI. Matrix Spike/Matrix Spike Duplicate: Acceptable.

All Matrix Spike (MS) and Matrix Spike Duplicate (MSD) percent recoveries for volatile analysis met QC guidelines. Relative Percent Difference (RPD) values between the two recoveries were within advisory limits.

VII. Internal Standards: Satisfactory.

All internal standard areas met QC criteria for volatile analysis except Chlorobenzene on sample S4 which had an area equal to 45% of the standard. Matrix interferences were identified with

this sample, so no action was taken as a result. All internal standard retention times were within 30 seconds of the retention time of the associated calibrated standard.

VIII. TCL Compound Identification: Acceptable.

A review of 10% of the data indicated that the retention times and peak area of the positive results have reasonable agreement with the standards. Mass spectra also have reasonable agreement with mass spectra generated from the library search.

IX. Tentatively Identified Compounds: Not Applicable.

All TICs have a corresponding library search and appear to be properly identified.

X. Compound Quantitation and Detection Limits: Satisfactory.

A review of 10% of the data verified the accuracy of the quantitation calculations. The reported detection limits reflect concentrations, dilutions, sample weights, etc.

Because dilutions were necessary to analyze samples S5, D1, D2, EBT and T18, detection limits for these samples exceeded the Practical Quantitation Limits (PQL) defined in EPA Method 8240 for volatile compounds. (PQLs have been adjusted as recommended for high level soils and water-miscible wastes). Taking the dilutions into consideration, the reported detection limits are acceptable for all samples. For sample D2, the reported detection limits are 500 times the PQL due to a dilution of 1:25,000. Thus, the detection limits for volatile organic compounds in D2 range from 125 to 2500 mg/Kg (See Analytical Data Package - Sample Results). Detection limits are not reported in the data summary in order to conserve space, but the elevations should be kept in mind when using the data.

Semi-Volatile Organics

COMMENTS: Semi-volatile analyses were also affected by highly concentrated samples requiring dilution. Elevated detection limits occur in samples S3, S5, D1, D2, EBT and T18 (See Item XI).

I. Sample Holding Time: Acceptable.

All sample holding times were met.

II. GC/MS Tuning: Acceptable.

All tuning check compound mass abundances and ratios were within specified limits for semi-volatile analysis.

III. Calibration

A. Initial Calibration: Acceptable.

All volatile Target Compound List (TCL) compounds were within required limits for the initial calibrations with average Relative Response Factors (RRFs) above 0.05 and Percent Relative

Standard Deviations (%RSDs) at or below 30 percent.

B. Continuing Calibration: Satisfactory.

All TCL compounds were at or above the required RRF criteria of 0.05 for semi-volatiles. All semi-volatile TCL compounds had Relative Percent Difference (RPD) values at or below the required 25 percent except 1,3-Dinitro-2-methylphenol (28.19%) and Benzidine (27.35%) on 1-18-93 and 2,4-Dinitrophenol (26.766)% on 1/19/93. None of these compounds was detected in any sample, so no action taken as a result.

IV. Method Blank: Acceptable.

No TCL compounds were detected in the method blank.

V. Surrogate Recoveries: Acceptable.

Percent recoveries (%Rs) for most surrogate compounds for semi-volatile analysis met QC criteria. The dilutions required to bring sample S5 into calibration range diluted out the surrogates on those runs. In addition, for sample T18, the 2,4,6-Tribromophenol surrogate was out of control limits (14% recovery). No action was taken by the reviewer as a result of these recoveries.

VI. Matrix Spike/Matrix Spike Duplicate: Acceptable.

All Matrix Spike (MS) and Matrix Spike Duplicate (MSD) percent recoveries for semi-volatile analysis met QC guidelines.

VII. Internal Standards: Acceptable.

All internal standard areas on diluted samples from which data were taken met QC criteria for semi-volatile analysis. All internal standard retention times were within 30 seconds of the retention time of the associated calibrated standard.

VIII. TCL Compound Identification: Acceptable.

A review of 10% of the data indicated that the retention times and peak area of the positive results have reasonable agreement with the standards. Mass spectra also have reasonable agreement with mass spectra generated from the library search.

IX. Tentatively Identified Compounds: Acceptable.

All TICs have a corresponding library search and appear to be properly identified.

XI. Compound Quantitation and Detection Limits: Acceptable.

A review of 10% of the data verified the accuracy of the quantitation calculations. The reported detection limits reflect concentrations, dilutions, sample weights, etc.

Dilutions were necessary due to high concentrations of TICs on samples S5, D1, D2, T18 and EBT. This caused detection limits to exceed PQLs suggested in EPA Method 8270. Detection

limits for these samples ranged from two to eight times the PQL due to dilutions of the extract. The detection limits for every compound have not been listed on the data summary, but are available in the analytical package sample results.

Pesticides and PCBs

COMMENTS: No problems were encountered during Pesticide and PCB analysis.

I. Sample Holding Time: Acceptable.

All sample holding times were met.

II. Instrument Performance Check

A. DDT Retention Time and Resolution Check: Acceptable

The retention time for DDT was 11.79 minutes on the standard chromatogram for 1/24/93 and 11.78 on 1/25/93. These RTs fall within 5% of the mean RT established by the calibration runs, and separation appears to be satisfactory. A Resolution Check Mixture, run at the beginning of the initial calibration for each column, met QC requirements for resolution.

B. Retention Times: Acceptable.

All retention time windows were reported and the standards fell within those windows.

C. Performance Evaluation Mixture: Acceptable.

The PEM was run as needed and met QC requirements for resolution, retention time and percent recovery for both surrogates and target compounds. The percent breakdowns (individual and combined) of 4,4'-DDT and Endrin were acceptable for runs associated with the samples.

D. DBC Retention Times: Acceptable.

The percent difference in the retention time for the surrogate dibutylchlorodate (DBC) in all standards and samples is smaller than 0.3% (capillary column analysis).

III. Calibration

A. Initial Calibration: Acceptable.

The individual standard mix analysis met QC requirements for resolution, retention time, deflections, and percent relative standard deviation (%RSD). Multi-component Target Compound analyses met contract-required control limits for retention time and calibration factor determination.

B. Continuing Calibration: Acceptable.

Blanks, PEMs, and ISMs were run at the contract-required intervals and met QC criteria for

resolution and retention times. All target compounds in the PEM had Relative Percent Difference (RPD) values at or below the required 25 percent.

IV. Method Blank: Acceptable.

No target compounds were detected in any blanks.

V. Surrogate Recoveries: Satisfactory.

Percent recovery of the surrogate compound tetrachloro-m-xylene (TCX) was high (above 150%) for samples S1, S2, S3, S4, and S5. TCX recovery was low (below 60%) for sample D1. These samples were all reanalyzed on 1/29/93 with similar results, indicating a matrix interference. No action was taken by the reviewer as a result of these recoveries.

VI. Matrix Spike/Matrix Spike Duplicate: Satisfactory.

All percent recovery (%R) and relative percent difference (RPD) values met suggested QC limits except:

Compound	MS	MSD	QC Limits	RPD
Heptachlor	135	147	35-130	8.5
Endrin	151	151	42-139	0

Since both RPD values between the MS and MSD were acceptable, no action was taken as a result of these recoveries.

VII. Target Compound Identification: Acceptable.

A review of 10% of the data indicated that the retention times and peak area of the positive results have been transcribed properly. For multi-component target compounds, reasonable agreement of relative peak heights and retention times with the standards has been achieved.

VIII. Sample Results Verification: Acceptable.

A review of 10% of the data verified the accuracy of the quantitation calculations. The reported detection limits reflect concentrations, dilutions, sample weights, etc.

Data Qualifiers and Definitions:

- U - The material was analyzed for, but not detected. The associated numerical value is the sample detection limit or adjusted sample detection limit.**
- UJ - The material was analyzed for but not detected. The reported detection limit is estimated because quality control criteria were not met. This value may not accurately represent the concentration necessary to detect the analyte in this sample.**
- J - The associated numerical value is an estimated quantity because the reported concentrations were less than the required detection limits or quality control criteria were not met.**
- NJ- The analysis indicates that the analyte is tentatively identified and the associated numerical value may not be consistent with the amount actually present in the sample.**
- R - The sample results are rejected (analyte may or may not be present) due to deficiencies in quality control criteria. Any reported value is unusable.**

ATTACHMENT K

Analytical Data Package (under separate cover)

ATTACHMENT L

Copy of Texas Water Commission Sample Results

Emchem Corporation
SWR No. 38184

On July 15, 1992, Superfund Coordinator Steve Hamm conducted an inspection of the above-referenced facility. During this inspection, samples were collected from the landfill area and contaminated soil near a large congregation of leaking drums. Below is a summary of the sample results for those compounds which were detected.

I. Landfarm Area

- A. The following volatile organics, base-neutral extractable organics and metals were detected and identified.

Parameter	Actual Result	Detection Limit
Xylenes	12500 µg/Kg	2500 µg/Kg
Naphthalene	4070000 µg/Kg	1980000 µg/Kg
Phenanthrene	5160000 µg/Kg	1980000 µg/Kg
Pyrene	4400000 µg/Kg	1980000 µg/Kg
Chromium	3.5 mg/Kg	1.0 mg/Kg
Lead	29.8 mg/Kg	1.0 mg/Kg

- B. The following volatile organics were tentatively identified.

Parameter	Actual Result	Retention Time
Octane	6500 µg/Kg	16.01
Trimethylhexane	22000 µg/Kg	16.78
Ethyl-methylbenzene	8000 µg/Kg	19.75
Trimethylbenzene	5500 µg/Kg	20.51
Propynylbenzene	17000 µg/Kg	21.92
Methylnaphthalene	55000 µg/Kg	27.03

II. Stained Soil Near Drums

- A. The following volatile organics, base-neutral extractable organics and metals were detected and identified.

Parameter	Actual Result	Detection Limit
2-Butanone	5030 $\mu\text{g/Kg}$	2500 $\mu\text{g/Kg}$
Ethylbenzene	1720 $\mu\text{g/Kg}$	250 $\mu\text{g/Kg}$
Xylenes	6710 $\mu\text{g/Kg}$	250 $\mu\text{g/Kg}$
Phenanthrene	25200 $\mu\text{g/Kg}$	19800 $\mu\text{g/Kg}$
Pyrene	22200 $\mu\text{g/Kg}$	19800 $\mu\text{g/Kg}$
Total Lead	695 mg/Kg	1.0 mg/Kg
Total Chromium	347 mg/Kg	1.0 mg/Kg

- B. There were also two tentatively identified compounds detected. These were naphthalene (1200 $\mu\text{g/Kg}$) and acenaphthylene (8000 $\mu\text{g/Kg}$).

ATTACHMENT M

Copy of Letters Requesting and Confirming Site Access



ecology and environment, inc.

4801 WOODWAY, 280 WEST, HOUSTON, TEXAS 77056, TEL. (713) 871-9460
International Specialists in the Environment

November 12, 1992

Dr. Emery Miller
5447 Paisley
Houston, TX 77096

Dear Dr. Miller,

In October 1992, the Emergency Response Branch of the United States Environmental Protection Agency (EPA) received a request for assistance from the Texas Water Commission (TWC) in its investigation of the Emchem facility located at 4308 Rice Drier Road in Pearland, Brazoria County, Texas. In order to determine if a threat to public health or the environment exists, the EPA plans to execute a thorough site assessment. The investigation will require authorized EPA contractors to have access to the entire property, and investigative activities may include the following: visual inspections, photodocumentation, air monitoring, and/or sampling (soil or waste).

Enclosed is a "Consent for Access to Property" form which lists the address of the property which the EPA would like your permission to investigate. The requested access to your property is voluntary and given without any coercion or threat by the EPA or its authorized representatives. If you agree, please sign and date the form and return to the address listed above within one week of receipt of this letter. (Return of the signed form by certified or registered mail is suggested to avoid any confusion or delay.) If you do not return the form within one week of receipt, the EPA will assume that you have declined access to the referenced property. If this is the case or if you choose to decline access, the EPA may elect to pursue other options to obtain access to your property as described in §104(E)(5) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Your cooperation and timely response is greatly appreciated. If you have any questions regarding this matter, please feel free to contact me at the above number. You may also contact Mr. Warren Zehner, the EPA On-Scene Coordinator, at (713) 983-2127.

Sincerely,

Megan F. Fedders
Region 6 EPA Technical Assistance Team

4

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threat to human health and the environment.

I realize that these actions by EPA are undertaken pursuant to its response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation and Liability Act (Superfund), 42 U.S.C. Section 9601 et seq.

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

Date

Signature



ecology and environment, inc.

4801 WOODWAY, 280 WEST, HOUSTON, TEXAS 77056, TEL. (713) 871-9480

International Specialists in the Environment

January 5, 1993

Dr. Emery Miller
5447 Paisley
Houston, TX 77096

Dear Dr. Miller,

I would like to confirm our conversation of this morning and of December 17, 1992. In December, you stated that you would consent to EPA access of your property at 4308 Rice Drier Road as long as you were present during the investigation. The team of EPA contractors, including myself, will meet you at the Emchem facility on January 12, 1993 at 1000 hours to perform our site assessment.

Once again, investigative activities will include the following: visual inspections, photodocumentation, air monitoring, and soil sampling. In addition, if any containers (drums or tanks) appear to contain hazardous materials, we may want to sample those.

Thanks again for your cooperation.

Sincerely,

Megan F. Fedders
Region 6 EPA Technical Assistance Team

ATTACHMENT N

Records of Communication (5 pages)

RECORD OF COMMUNICATION

Conversation with:

Name Dr. Emery Miller
Address 5447 Pawley
Houston, TX 77096
Phone 713 - 723-1651
(Area Code) (Number)

Date 12 / 17 / 92
(Mo) (Day) (Year)
Time 1222 AM/PM
☒ Originator Placed Call
☐ Originator Received Call

TDD# 706-9210-079 PAN# ETX01393A

Subject Consent Agreement for ERM/EM

Discussion: ① TAT contacted Dr. Miller and asked if he had received letter requesting site access. Dr. Miller confirmed the receipt but he did not want to sign agreement form.
② Dr. Miller agreed to allow TAT to enter property and sample if he was present.
③ Dr. Miller requested more information concerning our activities and record as well as why state's data was not sufficient.
④ TAT explained the EPA's desire was to establish whether imminent & substantial endangerment to public health or the environment exists.
⑤ TAT told Dr. Miller he would be contacted to set up a sampling date.

Follow-Up-Action: Called QSC to report.

Originator's Signature: Megan Fedders

RECORD OF COMMUNICATION

Conversation with:

Name Warren Zehner
Address EPA Lab
Houston, TX
Phone 713 - 983-2127
(Area Code) (Number)

Date 12/17/92
(Mo) (Day) (Year)
Time 1230 AM/PM

☒ Originator Placed Call
☐ Originator Received Call

Subject Emchem Site Access

TDD# 706-9210-77 PAN# GTAD1395A

Discussion: TAT related conversation with Dr. Miller
to OSC Zehner and asked if verbal
consent agreement OK. He said OK
as long as I have record and send
Dr. Miller a letter stating (confirming)
verbal OK.

TAT will do work in early Jan.
OSC OKayed TAT to set up analytical
of 10 samples - matrix and exact
number TBD.

Follow-Up-Action: Set up sampling dates.

Originator's Signature: Megan Fedders

RECORD OF COMMUNICATION

Conversation with:

Name Dr. Emory Miller

Address 5447 Paisley

Houston, TX 77096

Phone 713 - 723-1651

(Area Code) (Number)

Date 1 1 5 1 93
(Mo) (Day) (Year)

Time 9:05 AM/PM

☒ Originator Placed Call

☐ Originator Received Call

TDD# 704-9290-7PAN# ETX 01395AA

Subject Scheduling of Emory Miller Visit

Discussion: TAT would like to call CRT to site and sample
next Tuesday, Jan 12, 1993. Dr. Miller
agrees to meet TAT at 10:00 am. He
also agrees to let us use wash house.

Follow-Up Action: Plan next site visit.

Originator's Signature: Megan Fedders

TDD AMENDMENT RECORD OF COMMUNICATION

Conversation with:

Name Warran Zimmerman
 Address E/H Lab
Houston, TX
 Phone - N/A
 (Area Code) (Number)

Date 1 / 8 / 93
 (Mo) (Day) (Year)
 Time 1405 AM/PM

☐ Originator Placed Call IN PERSON
☐ Originator Received Call
Megan Fedders
 Originator Name

TDD# T06-9210-079 Site Name Emchem Corporation

Specific Reason for Amendment Request:

No time to sample until Jan, 1993.

Items to be Changed:

4A. Estimate of Total Hours: From _____ to _____
 Cost: From \$ _____ to \$ _____

8A. Completion Date: From: 1/31/93 to 2/28/93

10. General Task Description:

From: _____

 To: _____

11. Destree Report Form: From _____ to _____

12. Specific Elements (DO NOT ALTER ORIGINAL STATEMENTS; Add any changes in this section)

13. Interim Deadlines: From _____ to _____

Changes reviewed and ☒ approved _____ disapproved by OSC.

OSC Signature (Optional)

Megan Fedders
 TAT Signature

ROC ~~Page~~ to Dallas 1-8-93
 Sent (Date)

Megan Fedders
Print Originator's Name
Ecology and Environment, Inc.

RECORD OF COMMUNICATION

Conversation with:

Name Warren Zeller

Address EPA Lab

Houston, TX

Phone 713 - 983-2127

(Area Code) (Number)

Subject Enclum TDD Amendment

Date 1 / 8 / 93

(Mo) (Day) (Year)

Time 1:405 AM/PM

☐ Originator Placed Call

☐ Originator Received Call

☒ IN PERSON

TDD# 706 9210-079 PAN# ETX013951917

Discussion:

Discussed Enclum Sampling
with CSC Zeller. Amendment
for one month approved as
well as OK to draft analytical
TDD.

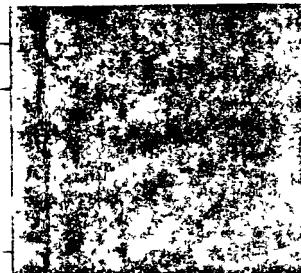
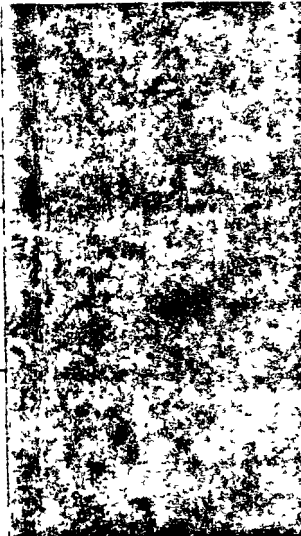
Follow-Up-Action:

Amend
~~Amend~~ TDD and draft analytical
TDD

Originator's Signature: Megan Fedders

ATTACHMENT O

Copy of Logbook (pages 1-10, 33-4, 44-8)



**ecology and
environment, inc.**
International Specialists in the Environment

Job Number 7T2061

EMCHEM SITE

TOL - 9210-079

ETX01395AA

TXD980750624

Pearland, Brazoria Co., TX

Dr. Emery Miller
5447 Paisley
Houston, TX 77096
723-1451

E & E Job Number ZT2061

Telephone Code Number _____

Site Name EMCHEM SITE
Pearland, Brazoria Co, TX

City/State _____

TDD T06-9210-079
PAN ~~ETX 103~~ ETX D1395AA
SSID 41

Start/Finish Date 11/6/92 , 2/9/93

Book 1 of 1

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

11/6/92 Enchem Corporation 706-9210-079

0905 TAT's Shields & Feddus depart office for warehouse.

0925 TAT departs warehouse for site.

1005 TAT arrives at ENCHEM site.

on Rice Dyer Road. No one is present and there is no fence around the facility. Tanks are visible from the road and correspond to the drawing provided by TNC.

1010 TAT begins to survey the site and check for tank contents.

Stained soil is visible to the west of the warehouse and documented.

There is possibility of some material

SITE SAFETY/WORK PLAN MEETING		
TIME: 1005		
WEATHER: Sunny 60°s		
PROPOSED WORK/SAFETY TOPICS:		
Activities: ① Survey site and photo-document		
Safety Issues: ① Slip/trip/fall		
② Overgrown vegetation ③ no contact with anything inside		
④ Stick to perimeter of property		
TNC: Jennifer Shields Megan Feddus	TNC: Jennifer Shields Megan Feddus	TNC: LEO 22
CONDUCTED BY: Megan Feddus		

Megan Feddus

11/6/92 Enchem Corporation 706-9210-079

in tanker truck farthest south of the warehouse. Warehouse is locked.

1015 TAT proceeds along South edge of site.

Soil in drum area is very stained - dark brown. Rusty drums are located throughout cleared area & a few are in the wooded area to the south. These appear to be rusty and empty.

1020 Sidewalk appears to be as indicated on sketch with a small ditch carved around drum area in front of landfill.

1025 Landfill area is about 30x50 ft with brownish/orangish material.

Vegetation is stressed to SE of it.

1030 TAT continues checking tanks with IR Pyrometer. Gradual (10°) change found on "Mineral Spirits Separator".

Of the 4 main, large tanks, only one seemed to contain product (~15 full).

Several tanks were open at the bottom also & were empty. (See sketch for exact locations of tanks with suspected contents.)

1040 Some drums have labels, but all appear rusted & open at top. A pool of oily liquid is towards the South of the Drum Area. Soil to the north of the facility and in the drainage ditch along road appears fairly clean.

1045 Machinery and possibly roll-off boxes are visible behind vegetation to the far east end of the site.

Megan Feddus

11/6/92 EM CHEM CORPORATION TOL-9210-079
 1047 A few corrections to the map
 are made.
 1050 TATs depart site for Herndon.

Megan E. Lellens

JAN 12, 1993 EM CHEM TOL-9210-079
 0800 TAT departs office for wallingford to load equipment
 0850 TAT departs wallingford for site. ——— 71st
 0935 TAT arrives at EM CHEM SITE. Mr Emory on-site. ——— DA
 0940 TAT conducts safety meeting. Organizes equipment ——— DA
 0953 TATs Reddy and Fadden conduct area air monitoring
 with HNU, TRIGAS, H₂S monitors. Mr Emory will accompany
 TAT during air monitoring. TAT in level C PPE, Mr Emory in level D
 1000 TAT completes air monitoring. No readings above background
 obtained by the TAT. See EQPT LOG FOR Background readings
 Backgrounds 0 for all readings except O₂ (20.9).
 1005 TATs Beeson and Fadden determine soil sample locations. TATs Reddy and Haglund to
 photo document site. ——— DA

SITE SAFETY/ WORK PLAN MEETING		
TIME: 0940	WEATHER: Overcast, cool	
PROPOSED WORK/SAFETY TOPICS: TAT ACTIVITIES INCLUDE		
① Air monitor ② Soil sample ③ Tank sample Hazardous ④ Photodoc/photodocumentation ⑤ Sample packaging include (1) slip/trip/fall (2) cold stress (3) contamination (see SSP) avoid contact when proper PPE (4) site debris - practice cut hazard avoid contact (5) Follow proper SOP during drum sampling + soil sampling (6) wear proper PPE during sample packaging		
SIGNATURE	PRINT NAME	DUTIES/AFIL.
<i>[Signature]</i>	Roberta Haglund	SSO
<i>[Signature]</i>	Megan Faddens	TL
<i>[Signature]</i>	David Beeson	TR
<i>[Signature]</i>	Satish Reddy	TR
CONDUCTED BY: D. Beeson		

1040 TAT Beeson to collect sample from tank, T18 & EBT ——— DA
 1058 TATs Beeson and Reddy sampling Tanks. TATs
 Faddens, Haglund Photodoc. site, prepare sample jars
 1120 TATs complete sampling Tanks T18 & EBT
 1131 TATs Reddy, Beeson begin sampling drums.
 Samples taken are to be 2 40 ml VOA and 2 16 oz
 Megan E. Lellens

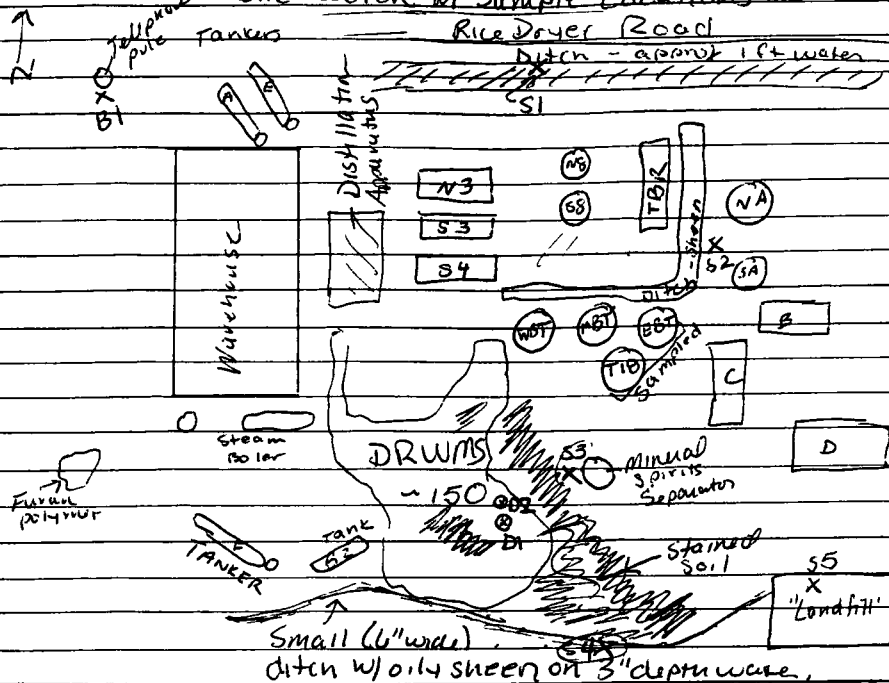
1/12/93 Emchem Corporation TDU 9210-079 REH
 jars per drum
 1151 TATs drum sampling. Dr Emory Miller has been observing and accompanying TATs while sampling both tanks and drums. TATs in level B, Dr Miller in level D. Two drums are sampled and the drums marked as "1" and "2" with paint.
 1205 TATs complete drum sampling. Dr. Miller has given his consent (voluntarily) for TAT to leave drum thieves and calorimeters on-site.
 1215 TATs FEEDERS AND HAGLUND BEGIN SOIL SAMPLING TAT in level C PDE. Mr Miller observing TAT Beeson deconing samples. TAT Reddy estimating technique.
 1255 TAT completes collection of soil samples — BB
 NOTE: Trowel used to collect background soil sample (B1) is deconned with wet paper towels and used to collect sample S4 due to shortage of sampling equipment.
 1300 TATs Reddy and Haglund pack up equipment while TATs Feeders and Beeson complete sample decon. Duplicates of each sample collected are given to Dr Miller as per his request. These samples are labelled but not sealed. Dr Miller takes samples inside warehouse.
 1310 As Dr Miller has an engagement at 1330 hours, he requests TAT to finish work quickly. TAT does not have time to investigate warehouse.
 1320 TAT departs site for Houston
 1400 TAT to lunch.
 1430 TAT begins unloading equipment at warehouse. TAT Feeders performs hazard categorization on four liquid
 Margaret Adellus

1/12/93 Emchem Corporation TDU 9210-07
 samples at TAT warehouse since not enough time to do so on site. This was due to Dr Miller's refusal to allow TAT to work on-site in his absence. All samples were non-characteristic by field hazard procedure.
 1530 TAT Feeders completes sample seals, tags, and chain of custody. Samples put on ice and sealed in cooler.
 1645 TATs depart warehouse, locking sealed cooler in office. MTH
 Late Entry: 1010 TATs Feeders and Beeson talk with Dr Miller. He tells them that the dark, asphalt-like patch at southwest corner of property is a furan based polymer which is inert. He poured material there to fill a low spot in ground. The material in the southeast corner of the site, labelled "land fill" on TWC sketch, is byproducts of his chemical processes. Material is inert and "non-hazardous" according to Dr Miller. Drums onsite also contain non-useful by-product and waste from reactions. Dr Miller told TAT his labeling system for most tanks on-site and TAT followed this protocol. Dr Miller informed TAT that tanks WBT, MBT, EBT, and T18 all contain his product which is approx. 3/4 triethyleneglycol and 1/4 tetrathylene glycol. Also one tanker truck near front of warehouse (Tanker A) contains same. Tank TBR is empty. Tanks N8, 38, NA and SA contain various amounts of similar material but would be hard to sample.
 Margaret Adellus

11/12/93

Emchem Corporation TOL-9210-079

Site Sketch w/ Sample Locations



In addition, tank N3 is empty except for small amount of furan-resin. D. Miller did not specify contents of tanks S3 and S4.

Tank 32 also contained his product (same as EBT and T18). All other tanks on property are empty. (Tanks B, C, D and Tankers E, F) (my numbering).

Morgan Hollers

11/13/93

EMCHEM CORPORATION TOL-9210-079

0830 TAT Feddes arrives at TAT warehouse and breaks seal on cooler to check on samples. TAT takes samples to lab.
0852 TAT Feddes relinquishes custody of sample

Morgan Hollers

2/9/93 Emchem Corporation TEL-9210-079

1450 TAT's Feathers and Beeson depart office
for warehouse.

1505 TAT departs warehouse for site.

1540 TAT arrives at Emchem Corporation
and meets Dr. Miller.

1542 TAT enters warehouse to inventory
and photo document. Warehouse
is full of junk. Approx 40x55 gallon
drums are inside, about half of
which are empty. About 20 drums
and 50-5 gallon buckets are full
of grey material similar to what
is in tanks, according to Dr. Miller.

No other chemicals are visible.

1550 TAT tours warehouse to photodocument.

1600 TAT departs site for Houston.

1630 TAT arrives at warehouse.

Trigam (Hochle)

1-12-93

EMCHEN SITE

TOL-9210-079

ANALYSIS LOG						
DATE: 1/11/93						
TIME: 11:13						
HNU 10.2eV	EPA 313577	1/11/93				
" "	"	1/24/93	(SPAN 74.4)	0	0LB	
H2S Monitor	EPA 724460			0		
TRI GAS	903018			%DEL-0.0		
"	"			%O2-20.9		
"	"			H2S-0.0		
"	"			CO-0.0		

no gas detected

11/12/93

Enchem Corporation

TOL-9210-079

SAMPLE DATA LOG

SAMPLERS: Megan Fadden

SMPL #	TIME	HTM	C/G	CS	FRSV	COC #	LOCATION/COMMENTS
EBT	1105	L	G	2	N	6-17338	Tank EBT
T18	1125	L	G	2	N		Tank T18
D1	1145	L	G	2	N		Drum #1
D2	1200	L	G	2	N		Drum #2
B1	1230	S	G	2	N		Background
S1	1238	S	G	2	N		North Ditch
S2	1244	S	G	2	N		East Ditch
S3	1247	S	G	2	N		Drum Area
S4	1254	S	G	2	N		South Ditch
S5	1256	S	G	2	N		Landfill

Samples EBT, T18, D1, and D2 to be analyzed for the following: Volatile Organics, Semi-volatile Organics, Priority Pollutant Metals, Pesticides and PCBs, pH, and Flashpoint. — MFA

Samples B1, S1, S2, S3, S4, S5 to be analyzed for the following: Volatile Organics, Semi-volatile Organics, Priority Pollutant Metals, Pesticides and PCBs.

Megan Fadden

2/9/93

Emchem Corporation TOL-9210-079

PHOTOGRAPH LOG Continued from p. 48

CAMERA/LENS (MODEL) NIKON 6006

SERIAL # EPA 9

TIME	SQ/FRS	ROLL #	DIR	SUBJECT	P/W
1550	1	4	S	Into warehouse	Beeson
"	2		S	from North Door	Fiddan
"	3		S		

1551 4

N 5-gallon Containers

1553 5-8

NW-NE Pan of Warehouse

Morgan & Associates

Emergency Corporation
PHOTOGRAPH LOG

45

06-9210-079

11/6/92

06-9210-079

from p. 48

CAMERA/LENS (MODEL) Kodak VR 35

EXPOSURE # 64558

TIME	SO/URE	ROLLS	L.R	SUBJECT	P/I
1005	1	1	S	N edge of site	77177
1006	2		S	"	

P/I
Beesmy
Fitch

iners
1704.50

1008	3		E	Stained soil w/	
1009	4		E	warehouse	
1010	5		SW	Asphalt like polymer	
1011	6		SE	Tank w/ possible contents	
1013	7		E	Behind warehouse	
1015	8		E	Drums	
1017	9		E	Empty Drum	
1018	10		N	Stained Soil	
1020	11		N	Drums & warehouse Tank	
1022	12		N	TANKS	
1025	13		E	Label #11A	
1026	14		N	Close up of Drum	
1027	15		W (D)	Close up - Oil, 2001	
1028	16		W	Close up Drum	
1030	17		N	Tanks w/ Scott paper	
1031	18		E	Drums E of site	
1035	19		SE	TAT using IR	
1037	20		N (D)	Trench along road	
1038	21		SW	Processing Area	
1040	22		-	Label	
"	23		W (D)	Oil in pt. cans	
1041	24		SW (D)	Gunk on drum	
1042	25		SW (D)	Drum label	
"	26		W	Drums E of warehouse	
"	27		N (D)	Bucket - Zinc Stender Tank	
1045	28		E (D)	Label	
1048	29		SW		
1048	30		S	PAN of E half	
1048	31	✓	S		

11/9/92

11/5/92

Emchem Corporation

TOL-9210-079

PHOTOGRAPH LOG

CAMERA/LENS(MODEL) Kodak VR35

SERIAL # E1A 645581

LINE	SQ/FR#	ROLL#	DIR	SUBJECT	FILE
1050	32	1	SW	Equid w/Tenca	7/11
1051	33		NW	pan of surveillance area	
	34		N		
	35		NE		
	36		E		

Roll #1 was ruined, so 101-154 do not exist. 7/11

NIKON 40045

JANUARY 12, 1993

1012	1	2	SW	Edge of site	Reddy
1012	2	2	SW	11	Hayford
1012	3	2	W	11	
1013	4		S	Drums	
1014	5		SE	Tankers and Warehouse	
1015	6		SE	Warehouse	
1016	7		SE	Stained soil w/ of warehouse	
1016	8		S	Asphalt-like polymer (Xuran resin to keep truck from sticking)	
1017	9		E	Tanks, debris South of warehouse	
1018	10		NE	Drums and above ground tanks	
1019	11		E	Drums, small tank S of warehouse	
1020	12		N	Batteries S of warehouse	
1021	13-14		SSE	Drums behind warehouse	
1021	15		N	Drums, debris E of warehouse	
1023	16	✓	S	Label on drum E of warehouse	✓

11/12/93

Enchem Corporation

TOL-9210-077

PHOTOGRAPH LOGCAMERA/LENS(MODEL) NIKON 4004SSERIAL # EPH 724943

TIME	SQ/FR#	ROLL#	DIR.	SUBJECT	P/I
1254	9	3	SE	VIEW W DUMP AREA	DB/ME
1300	10		SW	view of drum storage area	
1300	11		NW	view of distillation machine	
1301	12		E	drum on off site	
	13, 14, 15, 16				

SE → W Pan of south side of site

Continued on page 44

572 Pan of site



**ecology and
environment, inc.**

International Specialists in the Environment

Job Number FT2061

EMCHEM SITE

TOL - 9210-079

ETX0139 SAA

TXD980750624

Pearland, Brazoria Co., TX

ATTACHMENT P

Copy of TDD# T06-9210-079 and Amendment A

ATTACHMENT P

Copy of TDD# T06-9210-079

1A. Cost Center: ZT2061		TAT ZONE II CONTRACT CONTRACT NO. 68-WO-0037 TECHNICAL DIRECTION DOCUMENT (TDD) ECOLOGY AND ENVIRONMENT, INC.		2. No.: T 006-9210-079 A Amendment _____	
3. Account No.: ETX0139SA					
3A. Priority <input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low	4A. Estimate of Total Hours: (b) (4)	5A. EPA Site Name: EmChem Corporation		7. CERCLIS ID: TXD980750624	
	Total Costs: (b) (4)	5B. SSID No.: 4L	5C. City / County / State: Pearland, Harris, TX		8A. Completion Date: 2/28/93
3B. Key EPA Contact: Name: Zehner Phone: 713-983-2127		4B. Overtime Approved: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		6. Source of Funds: <input type="checkbox"/> CEPP _____ <input checked="" type="checkbox"/> CERCLA _____ <input type="checkbox"/> OPA _____ <input type="checkbox"/> UST _____	
8B. Reference Info: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Attached <input type="checkbox"/> No <input type="checkbox"/> Pick-up					
9. Type of Activity: <u>OPA</u> <u>CERCLA</u> <u>AS SPECIFIED ABOVE</u>					
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input type="checkbox"/> SPCC <input type="checkbox"/> On-Scene Monitoring <input type="checkbox"/> Spill Clean-up Funded </div> <div style="width: 30%;"> <input checked="" type="checkbox"/> Site Assessment <input type="checkbox"/> Removal Funded <input type="checkbox"/> Removal PRP (AO/CO) <input type="checkbox"/> On-Site Monitoring </div> <div style="width: 30%;"> <input type="checkbox"/> Special Project <input type="checkbox"/> Analytical Project <input type="checkbox"/> Corp. Special Project <input type="checkbox"/> Preparedness <input type="checkbox"/> UST <input type="checkbox"/> FEMA </div> <div style="width: 30%;"> <input type="checkbox"/> Quality Assurance <input type="checkbox"/> Training <input type="checkbox"/> Program Management <input type="checkbox"/> Technical Assistance <input type="checkbox"/> Information Management </div> </div>					
10. General Task Description: <u>Conduct site assessment for potential removal onsite - site located at end of Rice Dryer Rd., Pearland, TX.</u>					11. Desired Report Form: <input checked="" type="checkbox"/> Formal Report <input type="checkbox"/> Letter Report <input type="checkbox"/> Formal Briefing <input type="checkbox"/> Other (Specify) _____
12. Specific Elements: <u>to extend completion date</u> <u>TDD amended due to postponement of sampling mission to January.</u>					
1) <u>Coordinate with Steve Hamm of TWC on site access and site visit</u> 2) <u>Conduct windshield survey on site to develop sampling plan</u> 3) <u>Develop and execute site sampling to assess if ISE is present on site</u> 4) <u>Brief OSC on items 2 & 3</u>					13. Interim Deadlines: <u>N/A</u>
14. Authorizing DPO: <u><i>Harry Thompson</i></u> <div style="text-align: right; font-size: small;">Signature</div>					15. Date: <u>01/12/93</u>
16. Received by: <input checked="" type="checkbox"/> Accepted <u><i>Chi Jim</i></u> <input type="checkbox"/> Accepted with Exceptions (Attached) <input type="checkbox"/> Rejected <div style="text-align: right; font-size: small;">TATL Signature</div>					17. Date: <u>1/12/93</u>

Distribution

Sheet 1 White Sheet 2 Blue Sheet 3 Green Sheet 4 Canary Sheet 5 Pink Sheet 6 Goldenrod	- DPO Copy - TATL Copy - ZPM Copy - PO Copy - CO Copy - DPO Original (Unsigned by TATL)
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Fedders

1A. Cost Center:

2. No.:

TAT ZONE II CONTRACT
CONTRACT NO. 68-WO-0037
TECHNICAL DIRECTION DOCUMENT (TDD)
ECOLOGY AND ENVIRONMENT, INC.

T06-9210-79

1B. Account No.:

Amendment

ETX01395

0A. Priority

- ☐ High
☒ Medium
☐ Low

4A. Estimate of
Total Hours:

(b) (4)

Total Costs:

(b) (4)

5A. EPA Site Name:

hcon

5B. SSID No.:

D. C. / County / State:

7. U. HCLIS ID:

80750624

8A.C. ation Date:

193

3B. Key EPA Contact:

Name: Zehner

Phone: -9 -21

4B. Overtime
Approved:

- ☒ Yes
☐ No

6. Source of Funds:

- ☒ CERCLA
☐ OPA
☐ UST

☐ CEF

☐ Other

8B.F.

se Info:

- ☐ Attached
☐ Pick-up

9. Type of Activity:

OPA

CERCLA

AS SPECIFIED ABOVE

- ☐ SPCC
☐ On-Scene Monitoring
☐ Spill Clean-up Funded

- ☒ Site Assessment
☐ Removal Funded
☐ Removal PRP (AO/CO)
☐ On-Site Monitoring

- ☐ Special Project
☐ Analytical Project
☐ Corp. Special Project
☐ Preparedness
☐ UST
☐ FEMA

- ☐ Quality Assurance
☐ Training
☐ Program Management
☐ Technical Assistance
☐ Information Management

10. General Task Description:

trial site on site - site at
line Rd, Pearland, TX

11. Desired Report

Form:

- ☒ Formal Report
☐ Letter Report
☐ Formal Briefing
☐ Other (Specify)

12. Specific Elements:

1) coordinate with Steve Hamm of TWC
on site access and site visit

2) conduct windshield survey on site to
develop sampling plan

3) develop and execute site sampling to
assess if ISE is present on site

4) brief OSC on items 2 & 3

13. Interim Deadlines:

1) 10/16
2) 10/16

14. Authorizing DF

15. Date:

10 2

16. Received by:

☐ Accepted with Exceptions (Attached)

☐ Rejected

17. Date:

10/7/92

TATL Signature